A STUDY ON

ASTHIVAATHAM

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CONTENTS

INTRODUCTION

I want take this opportunity of doing this dissertation to bring out the simple and very effective native medicine of siddha medicine as siddha medicine is the knowledge of thousands of years old tamil people and not yet known around the world.

The constitution of India expects the citizens to spread the scientific temper as a fundamental duty. so it is over duty to spread the in-depth Knowledge of the tamil people.

It is believed that the tamil culture is thousands of years old there were three ancient civilization in this world one is euphrades – digress civilization, another one is nile civilization and one more is Indus valley civilization among these 3 civilization.

Indus is peoples are considered to be more civilized than others. Many archiologists and anthropologist all around the world have come to the conclusion that the original inhabitance of Indus – valley civilizations were Dravidians the term dravidians means tamil. The tamil culture is having thousands of years of experience, knowledge in all aspects of life especially in medicine. The intuitive intelligence of the original tamil people has brought out even the molecular level science applicable practically as a science of medicine. Even their intelligence of using even the music as a tool to make some

experiments reveal the sonographic application of vibrations because of their experiments. The recognition is mentioned by tholkappiar as

“The society will not survive without the clans of panan para.iyan, Thudian, kadamban”.

The continuity of all their dimensions is still in the form of siddha medicine.

Siddhars, the forefathers of siddha medicine classified the diseases into 4448 types. The more scientific approach to the all aspects of life even before thousands of years should be appreciated and bring in to limelight . I take this opportunity to do the above expectation.

AIMS AND OBJECTIVES

The indepth wisdom of siddha medicine, exposing simple and powerful medicine of siddha medicine, making siddha medicine as a general tonic, and giving a lending to manufactures of siddha medicine are considered as points before setting aims and objectives.

1. To Make a study on the clinical course of the disease Asthivatham with keen observation on etiology, Pathology, diagnosis, Prognosis.
2. To make use of the unique diagnostic methods mentioned in the siddha Medicine, and to study how the disease Asthivatham alters the normal physiological conditions under the topics mukkutram, poripulangal, udal thathukkal and envagai thervugal.
3. To study the extent of correlation of etiology, signs and symptoms of asthivatham in siddha aspect with Osteoporosis in Allopathy.
4. To have an idea about the incidence of the disease with ago, sex, socio economic status, habit, family history and climatic conditions.
5. To have a pilot study on Asthivatham with ‘Pirandai vatam’ internally.
6. To Study the Biochemical and pharmacological effects of the trial medicine.

7. To Apply modern parameters to confirm the diagnosis and prognosis of the diseases.
8. To have a plan for further research work in this disease.
9. To Bring out pirandai Vatakam to a medicine for Asthivatham if the results are satisfactory.
10. To make pirandai vatakam a common medicine for diseases of Bones.

REVIEW OF LITERATURES

The Siddha text thanvanthri vaithyam, Part I denotes the diseases ‘Asthivatham”, one of the diseases under vatha diseases.

Thanvanthri is the author of that book he explains asthivatham as a diseases of the bone, which is due to the derangement of the vatha kutram

The term ‘ Asthi’ means Bone

The term ‘vatham” means one of the three forms acting in the body.

The three forms are vatham, pitham and kabam

The Siddha and medicine, the cause for the diseases in the body are the derangements in these three forces. the three forces are called as ‘Mukkutrm’

This is written by thiruvalluvar as

“மிகினும் குறையினும் நோய்செய்யும் நூலோர்
வளிமுதலா எண்ணிய மூன்று”

Which means Disease will arise in the body if the three forces mentioned by the authors of the medical texts starting with vatham (vali) increases or decreases.

Vatham is a force which results in the combination of the two natural elements Vayu (air) and aahayam (space) of the five natural elements (Pancha Bootham).

Vatham, the force comes out of the reaction of vayu and aahayam is responsible for the all aspects of movements in the body.

The characteristics of the vatham in the body are dry, quick, rough, cold, light, mobile and minute.

Location of vatham

Yugi, one of the fore fathers of the siddha system of medicine states that vatham lies in the body below the umbilicus.

"உண்டி சமைத்துடற் கூட்டுங் குடற்பகுதி

திண்டிற **லெண்பு** செவிகுறங்கு ___ விண்ட

தொடுவுணர்வு தோற்றுவிக்கும் தோலிடுப்பிவ்வாறும்

வடுவி லிடமாய் வளிக்கு"

- மருத்தவ தனி பாடல்

The Siddha medical texts lik 'Tamil vaidhya sadhagam' and Thirumoolae naadi explains lip. thigh, bones, undhiyam keel Moolam (below the umbilicus), nerves, muscles, hair follicles, kolluppu (one of the seven udal thathus), Joints, tongue, and Bone Marrow as the residing places of vatham.

"நெளிந்திட்ட வாதமபா னத்தைப் பற்றி

நிறைந்திடையைச் சேர்ந்துந்திக் கீழே நின்று

குளிந்திட்ட மூலமததூ டெழுந்து காமக்

கொடியிடையைப் பற்றியைழுங் குணத்தைப் பாரே

குணமான **எலும்பு** மேற்றொக்கை நாடி"

- சித்த மருத்துவாங்க சுருக்கம்

Natural Properties of vatham

"ஒழுங்குடன் தாழேழ் மூச்சோங்கி இயங்க

எழுச்சிபெற எப்பணிப்பு மாற்ற ___ எழுந்திரிய

வேகம் புலன்களுக்கு வேச் சுறுசுறுப்பு

வாகளிக்கும் மாந்தாக்கு வாயு"

- ❖ It gives Briskness to the body movements
- ❖ Responsible for respiration
- ❖ The movement of the vayus (air in the effect of vatham) is responsible for the functioning of the mind, thought and the body
- ❖ Responsible for the fourteen vegams (physiological reflexes)
- ❖ Responsible for the movements and functions of seven udal thathukkal (Body tissues classified according to Siddha system)
- ❖ Responsible for the functions of the Aimporihal (functions of body, mouth, eye, Nose and ear)

Own Qualities

Kadina	Rough
Varatchi	Dry
Elagu	Light
Kulirchi	cold
Asaidhal	Unstable

Anuthuyam	Subtle

Opposite Qualities

Mirudhu	Soft
Pasumai	Unctuous
Paluvu	Heavy
Akkini	Hot
Sthiram	Stable
Katti	Solid

Tastes and vatham:

"புளி துவர் விஞ்சு கறியால் பூரிக்கும் வாதம்"

- கண்ணுசாமியம்

The tastes sour and Astringent are having the action of increasing the vatham.

"வாதமே லிட்டால் மதுரம் புளிப்பு"

- கண்ணுசாமியம்

The tastes sweet, sour and salt are having the action of decreasing the vatham in the body.

As

Vatham = Vali + Aahayam

(Air + Space)

The element air is present in butter, Astringent and bitter tastes.

The element aahayam is present in bitter taste

Tastes and element.

Sweet = earth + Water

Sour = Earth + Fire

Salt = Water + Fire

Bitter = Air + Aathayam

Pungent = Air + Fire

Astringent = Earth + Air

Fluctuations in Vatham According to Seasons:

Vatham is Active in the tamil months of aadi, aavani, purattasi and aippasi.

This activeness is natural and physiological

1. Thannilai valarchi of vatham:

   'Thannilai valarchi' means a kutram, which is provoked on its own places of action.

   Vathamgets this type of provocation during Mudhuvenil kaalam (The Tamil Months of aani, and aadi)

2. Vetryunilai Valarchi of Vatham.

   'Vetrunilai Valarchi' means a kutram, which is provoked in other locations in its action vatham gets the trype of provocation in kaar kaalam (The Tamil moths of aavani and purattasi)

3. Thannilai adithal of vatham:

'Thannilai adaithal means' a Kutram, which is provoked earlier comes to itas normal physiological action.

The provoked vatham attains normal action in koothirkaalam (in the tamil months of Aippasi and kaarthigai)

Functions of deranged Vatham

- Body ache
- Pain of different types like severe pain of local character, traumatic pain, throbbing pain.
- Displacement of point
- Numbers and pricking pain in the bones.
- Contraction, muscle wasting, inflammation and fractures
- Sleep impairment, decreased excretion of stools & urine.
- Blackish discoloration of stool.

Types of Vaatham

Based on the sizes of dominace and function Vaatham is classified into 10 in Siddha treatises. They are,

1. Pranan

According to YUGI MUNI, pranan starts from Moolatharam and comes through the nostril and does inspiration and expiration.

2. Abanan (Kizk Nokkum Kaal) :-

Its primary function is to empty the bowel, bladder relieves status, semen and menstrual fluid.

It reaches the ingested food extracts to their respective places.

3. Udhanan (Mel Nokkum Kaal) :-

This help digestion of ingested food in the upper gastro-intestinal tract.

It is also responsible for speech & memory.

4. Vyanan (Paravu Kaal) :-

It activate voluntary and involuntary movements of the body and thus make then to extend or contract.

It is responsible for taking the absorbed essence of the food to the different parts of the body.

5. Samanan (nadukaal) :-

Samanan is the moving force that transports these nutrients to the various tissue elements and discharge wastes into the colon.

6. Nagan :-

It is responsible for the higher intellectual functions learning, thinking etc. It causes opening and closing of eyelids.

7. Koorman :-

This causes yawning, closure of eyelids lachrymal secretion is also attributed to koorman.

8. Kirugaran :

Salivary secretions, nasal secretion hunger, concentration of the mind on one particular thing, sneezing, cough are all attributed in Kirugaran.

9. Devadathan :-

Laziness is attributed to devadhthan. The ocular movements, anger are also related to this vaayer.

10. Dhananjeyan :-

This vayu is the causative factor for the foul smell after death and bursts open.

Pitham

1. Anal Pitham :-

It helps digestion and dries up moist substances. It also regulates body temperature.

2. Ranjagam :-

Ranjaga Pitham is responsible for healthy blood.

3. Sathagam :-

It helps in determination & accomplishment of desired function.

4. Aalosagam :

It helps the faculty of seeing.

5. Prasagam :-

It gives colour and complexion and brightness of the skin.

Kapham :-

1. Avalambakam :-

It causes firmness of the limps. This is vital among all types of kapham for it controls the other four kapha forces and maintains equilibrium.

2. Kilethagam :-

It promotes the digestive process.

3. Bothagam :-

It helps to realize the taste of the consuming food.

4. Tharpagam :

It is responsible for moisture in nose, mouth and eyes.

5. Santhigam :-

Lubricates joints keeps skin soft

Seven physical constituents :-

1. Saaragam :-

It is responsible for all groups and development. It keeps the individual in good sprit and it directly nourishes the immediate constituent, the blood.

2. Chenneer :

Chenneer nourishes the body and is responsible for the ability and intellect of an individual.

3. Oon :

It gives shape IO the body, nourishes fat and gives plumpness.

4. Kozhuppu :-

It helps in lubricating the different organs and maintains greasiness / fatty matter of the body.

5. Enbu :-

The bone and cartilage tissue, Enbu thatcu, which is pervaded by the elements earth with air and space inside, is next in the nourishment lineage.

It is responsible for the shape, posture and movement of the body and protects the internal organs.

6. Moolai :-

It occupies the Medulla of the bones and gives strength to them.

7. Sukkilam / Suronitham :

It is the subtle and pervasive essence of remaining in the body before it becomes the material for procreation.

"முறையாம் பிராணனோ டபானன் வியானன்
மூர்க்கமா முதானனோடு சமான னாகன்
திறமையாங் கூர்மனோடு கிருக ரன்றான்
தேவதத்த னோடுதனஞ் சயனுமாகும்"

- யூகி வைத்திய சிந்தாமணி

Measurement of Vatham :-

Vatham can be measured in the body by various methods. One among the ways is perception from the pulse.

Rhythm of pulse

The measurement of the normal rhythm of three thathus

Vatham – 1 Mathirai

Pitham – ½ Mathirai

Kabhham – ¼ Mathirai

Character of the pulses

"வாகினிலன்னங்கோழி மயிலென நடக்கும் வாதம்

ஏகிய வாமையட்டை யிவையென நடக்கும் பித்தம்

போகிய தவளைபாம்பு பொலவாம் சேத்துமந்தான்

அகிய நாடி மூன்று மமர்ந்திடிற் சன்னயாமே"

Variations in the Vathanadi in a day.

"காலையில் வாதநாடி கடிகையில் பத்தாகும்

பாலையில் பித்தநாடி பகருச்சி பத்தாகும்

மாலையாம் சேத்துமநாடி மதிப்புடன் பத்தாகும்

வாலையா மனோன்மணிக்கு வகுத்துமெ தொகுத்ததாமே"

- வைத்திய சார சங்கிரகம்

தினகர னுதயஞ் சேரும் வாதம்

எனவாம் நண்பகல் இயலும் பித்தம்

அந்தி வரினே அடையவது ஐயம்

பிந்திரவின் முதற் பேசும் வாதம்

இப்படி நாடி பப்பத் தாங்கடி

கைப்படி செல்லுமென் றறிவீர் பிடகரே”

According to Siddha physiology the vatha naadi is influenced in between 6-10 am.

“வெள்ளி வெண்டிங்கள் விளங்கும் புதனிடம்

தெள்ளிய ஞாயிறு செவ்வாய்சனி வலம்

வள்ளிய வியாழன் வளர்பிழைக்கோ இடம்

தெள்ளிய வியாழன் தேய்பிறைக்கே வலமாமே”

1. சந்திரநாட் காலையில் வாதம்

   நடந்திடில் சுகமெயதும்”

2. “சந்திரநாளஞ் சசிபுகற்புத்தி

   சுக்கில பக்கச் சுரற்குரு காலையில்

   இறைவ னியங்கில் எய்துஞ் சுகமே”

From the above text we can perceive that the vathanaadi is more dominant in Monday, Wednesday, Friday and Saturday.

“புகற் - வெள்ளி

புந்தி - புதன்

குரு-வியாழன்

சந்திரநாடி -வாத நாடி

சூரியநாடி-பித்தநாடி

சுழிமுனை-ஐயநாடி

இறைவன்-அரசன், வாதநாடி

Variations in vathanaadi in the months of the year

"மூவரு மீறி முனிவு கொளாமல்

தத்தம் நிலையில் தன்னரசியலும்

காலை வரைதனைக் கிளறக் கேண்மின்

ஆடியாதியாய் ஐப்பசி ஈராங்

அனிலமதற்கோ ரரசியல் காலம்

மீன் முதலாளி வீறு கொள் மந்திரி

தேன் முதன் மாசி சேனாதிபதிக் கே"

"சித்திரை வைகா சிக்குஞ்

செழுங்கதி ருதயந் தன்னில்

அத்தமா மானி யாடி

ஐப்பசி கார்த்தி கைக்கும்

மத்தியா னத்திற் பார்க்க

மார்கழி தையு மாசி

வித்தகன் கதிரோன் மேற்கில்

விழுகின்ற நேரந் தானே"

"தானது பைங்கூ னிக்குந்

தனதுநல் லாவ ணிக்கும்

மானமாம் புரட்டா சிக்கும்

மற்றைராத் திரியிற் பார்க்கத்

தேனென்ற மூன்று நாடித்

தெளிவாகக் காணு மென்று

கானமா முனிவர் சொன்ன

கருத்தைநீ கண்டு பாரே”

According to this manuscript the vathanaadi is influenced in the months of

Aadi,

Aavani

Purattasi

Iypassi

Normally the three kutrams vatham, pitham and kapam are perceived in the ration of 1: ½ : ¼ . In case of disease this ratio is disturbed.

MODERN ASPECT

OSTEOPOROSIS

The disease Asthivatham in siddha system can be correlated with the osteoporosis in modern Medicine.

According to the international classification of disease (ICD),

The striking feature of the osteoporosis is the reduced bone mineral density, which results in the deterioration of the Micro level architecture of the bone tissue.

This may result in the risk of fractures.

The Bone density started decreasing along with the increase in age, especially in women.

Fractures related to osteoporosis are calculated to affect around 30% of women and 12% of men in developed countries.

PATHOPHYSIOLOGY:

In normal physiology, the bone mass increases during skeletal growth to reach a peak bone mass.

This occurs at the age between 20 and 40 years and started to decreases after that.

In women due to the estrogen deficiency after menopause, the rate of deterioration in the bone mass increases. In that condition the amount of bone removed by osteoclasts exceeds the rate of new bone

formation by osteoblasts. Generally the age–related bone loss is common in both genders.

Particularly the bone formation is reduced unable to keep pace with bone resorption.

Deposition of fat in the space of the bone marrow also occurs due to age–related fall in the ability of bone marrow stem cells to distinguish into osteoblasts and an increase in their ability to differentiate into adipocytes.

The genetic factors and environmental factors are playing a role in the attainment of peak bone mass and also bone loss.

In majority of the population, the genetic factors play a vital role in peak bone mass and other determinants of fracture risks such as bone size and bone turnover.

Many genetic variants remain to be discovered as some polymorphisms have been discovered in several genes that are responsible for pathogenesis of osteoporosis, including the estrogen receptor gene(ESR1) , the lipoprotein receptor related protein 5 gene(LRP5) and the genes which encode osteoprotegerin (TNPRSF11B) Rank (TNPRSF11A) and the alpha l chain of type I collagen(COL 1A1).

The environmental factors responsible for osteoporosis are exercise and calcium intake particularly during adolescence and growth.

Smoking plays a deciding effect on Bone Mineral density and it is also associated with an increased risk of fracture. Even though female smokers are getting earlier menopause than non-smokers that practice is not noteworthy in India. Regarding alcohol, moderate intake does not show impact on Bone Mineral density but high alcohol intake is a recognized reason for the osteoporosis.

The most common cause of osteoporosis is the estrogen deficiency; particularly early menopause is a striking risk factor for osteoporosis.

In men osteoporosis is less common and secondary cause may be identified in about half of the cases.

Hypogonadism, alcoholism and the use of corticosteroids are the most common causes.

The Pathogenesis of osteoporosis is due to hypogonadism is as described for post menopausal osteoporosis as in women, in men the testosterone deficiency results in an uneven proportion between bone resorption and bone formation.

Genetic factors playing an important role in almost half of the cases with no identifiable cause.

The Patients who undergoes corticosteroid therapy are prone to osteoporosis.

The corticosteroid of prednisolone exceeds 7.5 mg daily and also continued for more than 3 months, then the risk of osteoporosis increases.

Corticosteroids have negative effect on calcium metabolism and bone cell function. Corticosteroids play vital role on the osteoblasts function and osteocyte apoptosis and steroid-induced osteoblast. The intestinal absorption of the calcium is also inhibited by the Corticosteroids. It results in the reduced serum calcium level which results in secondary hyperparathyroidism along with increase in osteoclastic bone resorption.

High dose of steroids intake also may results in hypogonadism.

There are some cases in which the cause is unknown, like osteoporosis associated with pregnancy. It presents with back pain and multiple vertebral fractures during second or third trimester.

Even though the cause is unknown, it may be due to increased bone loss in that period in patients with pre-existing low bone density.

The other causes are due to endocrine diseases, in some inflammatory diseases, in case of particular drugs, and in some gastro intestinal diseases primary hyperparathyroidism results in bone loss because of elevation in parathyroid hormone increases bone turnover and the balance between the bone formation and bone resorption is disturbed negatively. A same mechanism is applicable in thyrotoxicosis, due to raised levels of thyroid hormones.

A rare cause for osteoporosis is Cushing's disease. In this case the mechanism is identical with that of the Corticosteroid induced osteoporosis.

Calcium in take plays a vital role in osteoporosis Anorexia nervosa results in osteoporosis in due to column deficiency and vitamin D deficiency consequent secondary hyperparathyroidism .

Also in AIDS osteoporosis is due to decreased body weight prolonged immune activation and anti-retroviral theraphy. Chronic inflammatory diseases increase bone resorption and also suppresses bone formation by release of the pro-inflammatory cytokines such as 1L-1 and TNF and increased expression of RANK by lymphxytes . Bone resorting factors like INF, Lymphotoxin and parathyroid hormone-related protein(PTHrp) having similar mechaniss functions in some cancers. Systemic mastocytosis causes release of bone resorting factors.

Gancher’s diseases

also come release of bone resorbing factors.

MATERIALS AND METHODS

The disease Asthivatham is mentioned and has been dealth in the Book ‘Dhanvanthri Vaithya par I written by Dhanvanthri. The internal medicine ‘Pirandai vatakam’ mentioned in the ‘The siddha formulary of India’ and also in the ‘Siddha Vaithya thirattu’ has been selected as the trial medicine for the disease ‘Asthivatham’.

The disease Asthivatham of Siddha medicine is studied and correlated with the osteoporosis in Allopathy.

Selection of Patients:

Patients were selected according to the symptoms mentioned under ‘Asthivatham’ and also the modern investigations were used to confirm the diagnosis. For this purpose a screening camp for osteoporosis has been done in the government siddha medical college palayamkottai.

Eighty patients were diagnoseded and out of that 20 patients were admitted in the in patient department of government siddha medical college palayamkottai. Another 40 patients were selected for the treatment with calcium for the comparative study.

Before starting the trial of the medicine the biochemical analysis and the pharmacological analysis were done in the Biochemistry lab and pharmacology labs of the government siddha medical college palayamkottai respectively.

In this study detailed history was taken from the patients, separate questionnaire were prepared for this purpose.

And separate case sheets were prepared for this purpose based on Both Siddha and Modern Concepts.

Investigations:

As Asthivatham is correlated with the Osteoporosis, the modern investigations for that disease is also applied to the Asthivatham along with the siddha type of investigations. Some of the investigations are routine blood tests, urine tests, and golden investigation, the Bone Mineral density and X-ray were done. Along with this, Blood Sugar, Blood urea, cholesterol were also investigated. Along with the Siddha way of investigations like Poriyaltherthal, Pulanaal arithal, Vinathal mukkutra nilaihal, envagaithervugal, and examination of seven udal thathukkal.

Management:

The damaged vatham was brought to normal by purgative. Internal Medicine Agasthiyar Kuzhambu 135mg with plam Jaggery with hot water was used as purgative for this purpose. Then the trial drug 'Pirandai Vatakam' was given thrice a day with milk. The trial drug was prepared in the P.G Practical hall with the Knowledge and supervision of the teaching staffs of the P.G Departments.

RESULTS AND OBSERVATION

For this clinical study, 20 In-patients and 60 Out-patients were selected and treated in P.G. III, Sirappu Maruthuvam, Govt. Siddha Medical College & Hospital, Palayamkottai. Results were observed with respective the following criteria.

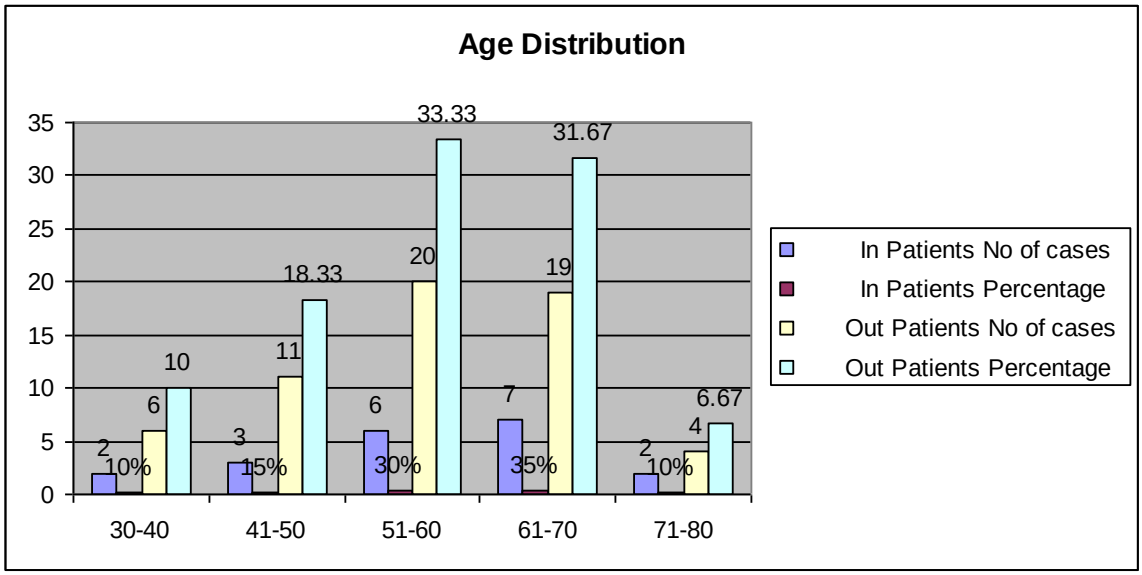
1. Age distribution
2. Sex distribution
3. Mukkutra Kaalam
4. Thegi
5. Gunam
6. Religion
7. Thinai
8. Occupation
9. Socio economic status
10. Diet factors
11. Predisposing factors
12. Associated diseases
13. Aetiological factors
14. Mode of onset
15. Duration of illness
16. Duration of Treatment

17. Clinical manifestations
18. Kosangal
19. Mukkutram
    a. Disturbances in Vatham
    b. Distrubances in Pitahm
    c. Disturbances in Kabham
20. Involvement of Seven Udal Thathukkal
21. Envagai Thervugal
22. Gradation of symptoms
23. Assessment of results

Table – I

AGE DISTRIBUTION

Sl.No	Age group in years	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	30-40	2	10%	6	10
2.	41-50	3	15%	11	18.33
3.	51-60	6	30%	20	33.33
4.	61-70	7	35%	19	31.67
5.	71-80	2	10%	4	6.67



Among 60 Out-Patients

10% of cases were observed in the age group of 30 to 40 years.

15% of cases were observed in the age group of 41 to 50 years.

30% of cases were observed in the age group of 51 to 60 years.

35% of cases were observed in the age group of 61 to 70 years.

10% of cases were observed in the age group of 71 to 80 years.

Majority of cases were observed in the age group of 51 to 60 years.

Among 20 In-Patients

10% of cases were observed in the age group of 30 to 40 years.

18.33% of cases were observed in the age group of 41 to 50 years.

33.33% of cases were observed in the age group of 51 to 60 years.

31.67% of cases were observed in the age group of 61 to 70 years.

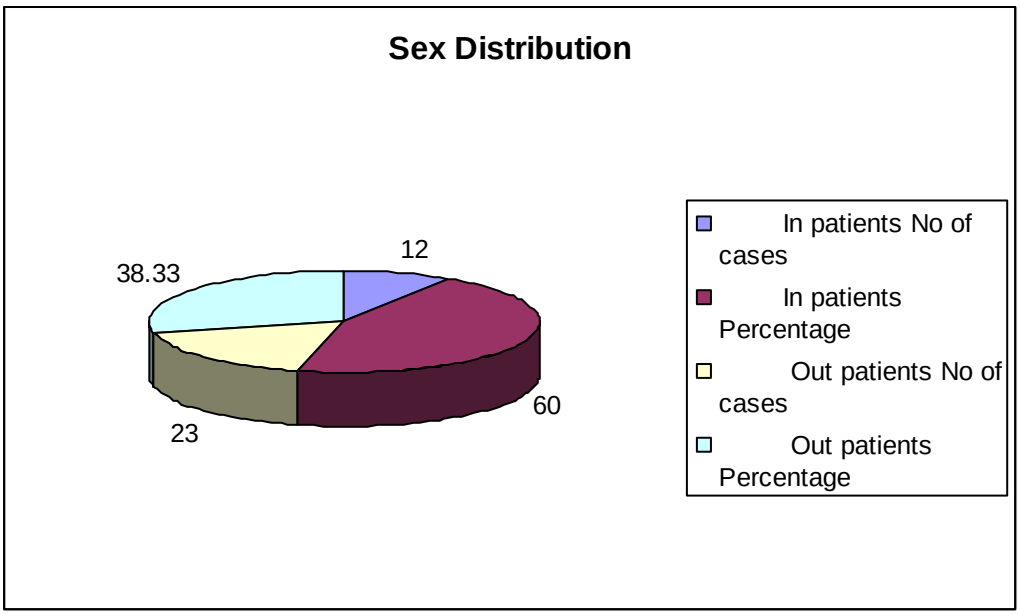
6.67% of cases were observed in the age group of 71 to 80 years.

Majority of cases were observed in the age group of 61 to 70 years.

Table – II

SEX DISTRIBUTION

Sl.No	Sex	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Male	12	60	23	38.33
2.	Female	8	40	37	61.67



Among 20 In-Patients

Out of 20 In-Patients 60% were Males and 40% were females.

Among 60 In-patients

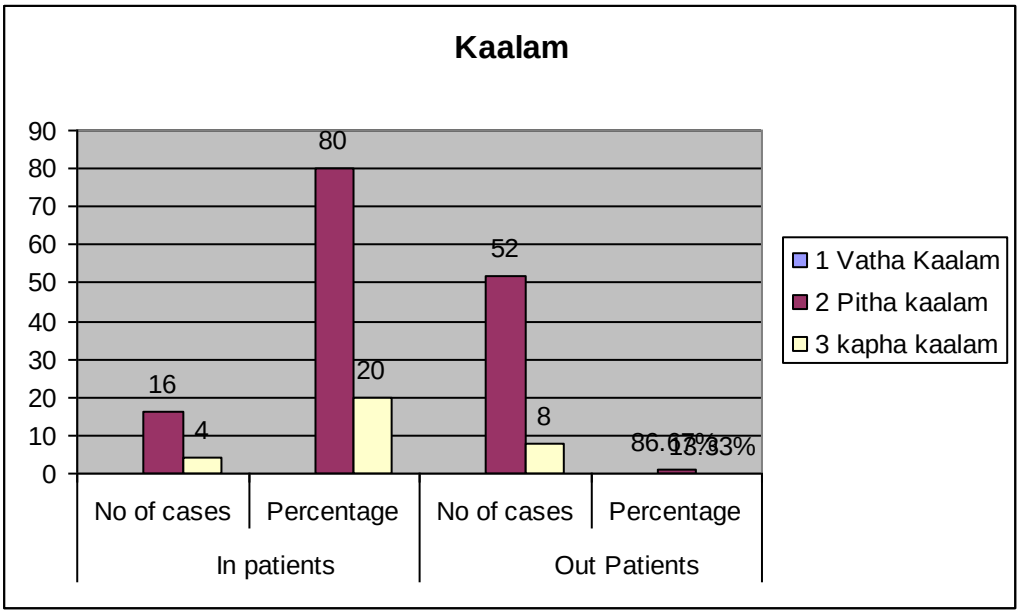
Out of 60 Out-Patients 38.33% were Males and 61.67% were Females.

Majority of the cases were females.

Table – III

KAALAM

Sl.No	Kaalam	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Vatha Kaalam	-	-	-	-
2.	Pitha Kaalam	16	80	52	86.67%
3.	Kapha Kaalam	4	20	8	13.33%



Out of 20 In-Patients

80.00% of Cases were seen in the Pitha Kaalam.

20.00% of Cases were seen in the Kapha Kaalam.

Majority of the cases were observed in Pitha Kaalam.

Out of 60 Out-Patients

86.67% of Cases were seen in the Pitha Kaalam.

13.33% of Cases were seen in the Kapha Kaalam.

Majority of the cases were observed in Pitha Kaalam.

Table – IV

CONSTITUTION OF THE BODY

Sl.No	Construction of Body	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Vatha thegi	12	60	34	56.67
2.	Pitha thegi	6	30	15	25
3.	Kapha thegi	2	10	11	18.333
4.	Thontha thegi	-	-	-	-

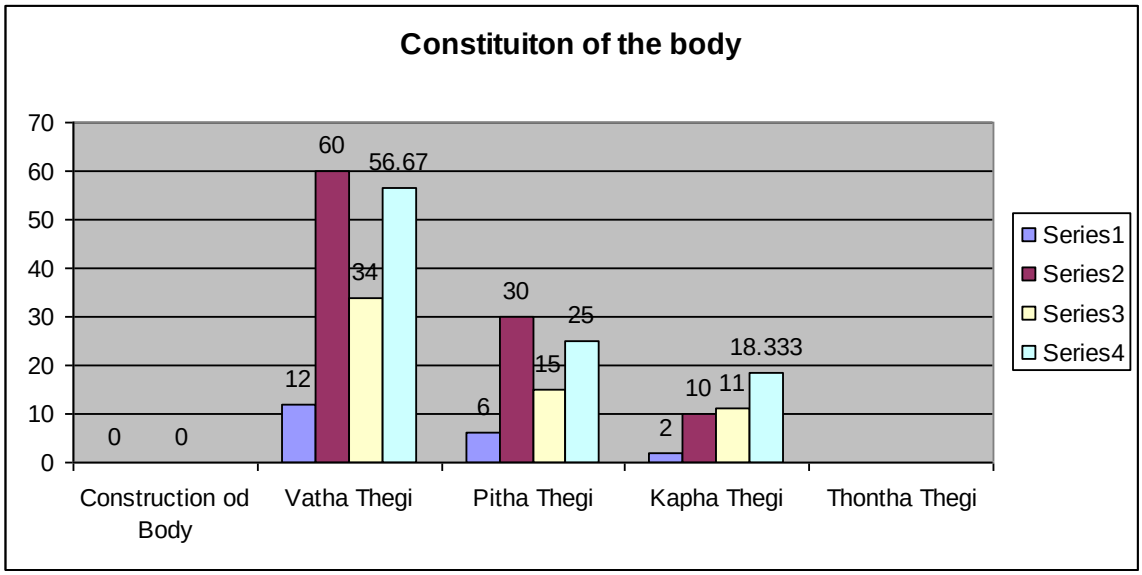


Table – V

GUNAM

Sl.No	Gunam	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Sathuvam	-	-	-	-
2.	Rajothuvam	-	-	-	-
3.	Thamogunam	20	100	60	100

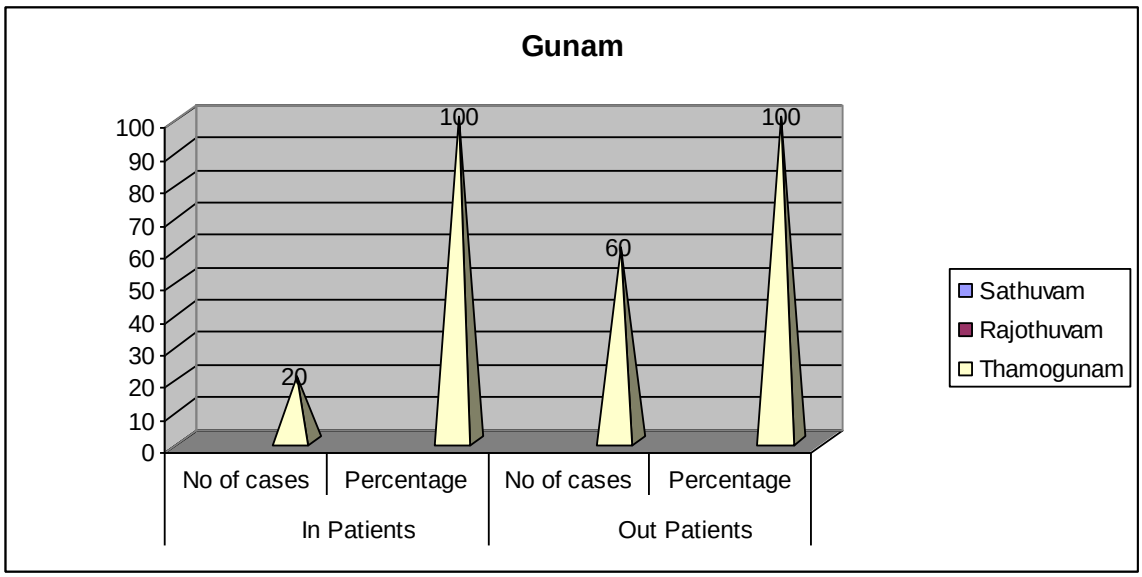
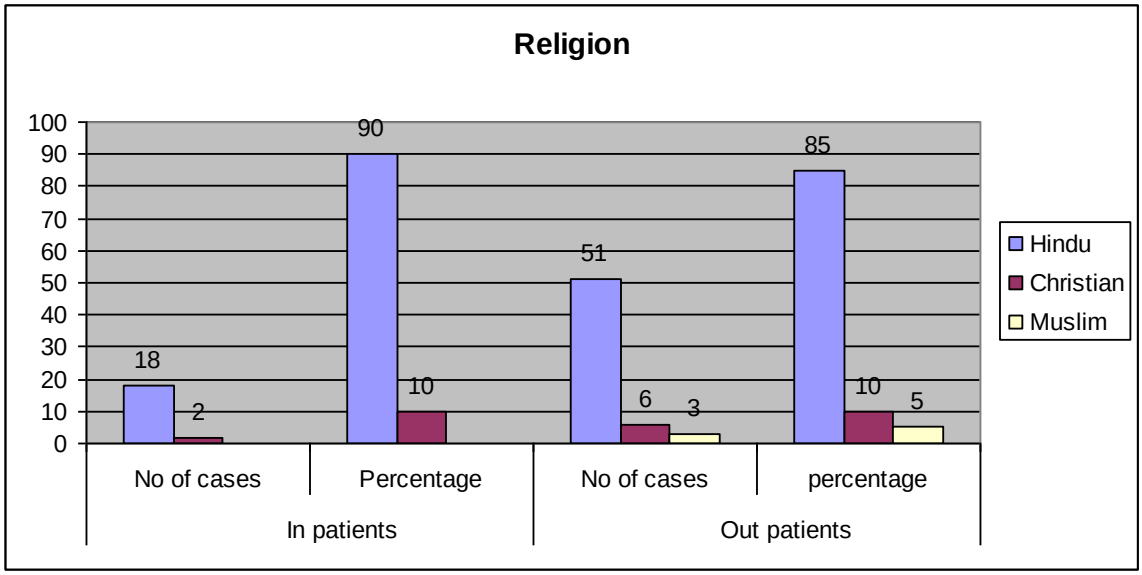


Table – VI

RELIGION

Sl.No	Religion	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Hindu	18	90	51	85
2.	Christian	2	10	6	10
3.	Muslim	-	-	3	5



Out of 20 In-Patients

90.00% of Cases belongs to Hindu

10.00% of Cases belongs to Christianity.

Out of 60 Out-Patients

85.00% of Cases belongs to Hinduism.

10.00% of Cases belongs to Christianity.

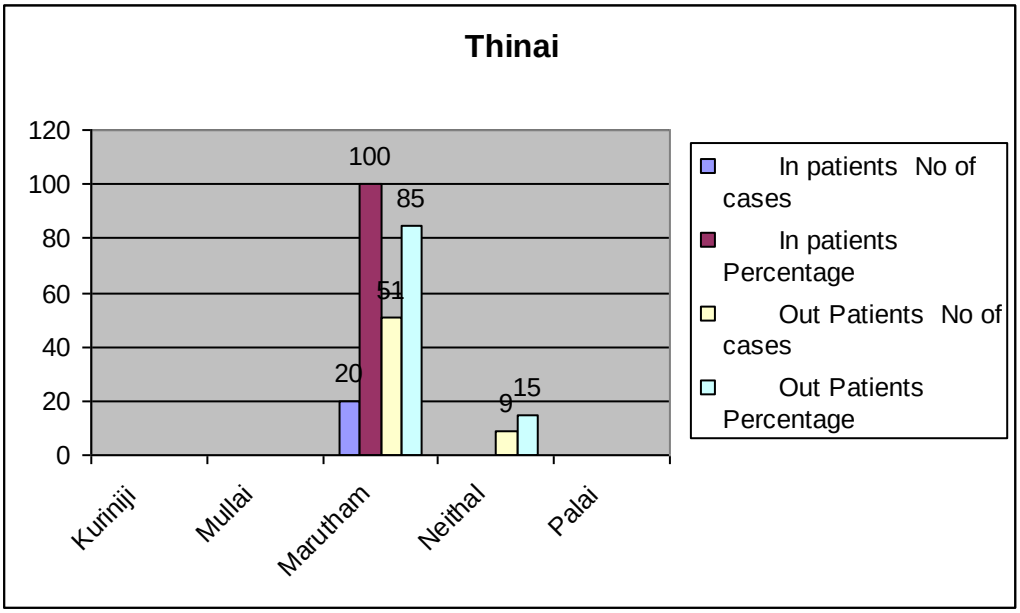
15.00% of Cases belongs to Islam.

Majority of the cases were Hindus.

Table – VII

THINAI

Sl.No	Thinai	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Kurinji	-	-	-	-
2.	Mullai	-	-	-	-
3.	Marutham	20	100	51	85
4.	Neithal	-	-	9	15
5.	Palai	-	-	-	-



Out of 20 In-Patients

All the cases were coming from Marutha Nilam.

Out of 60 Out-Patients

85.00% of Cases were coming from Marutha Nilam

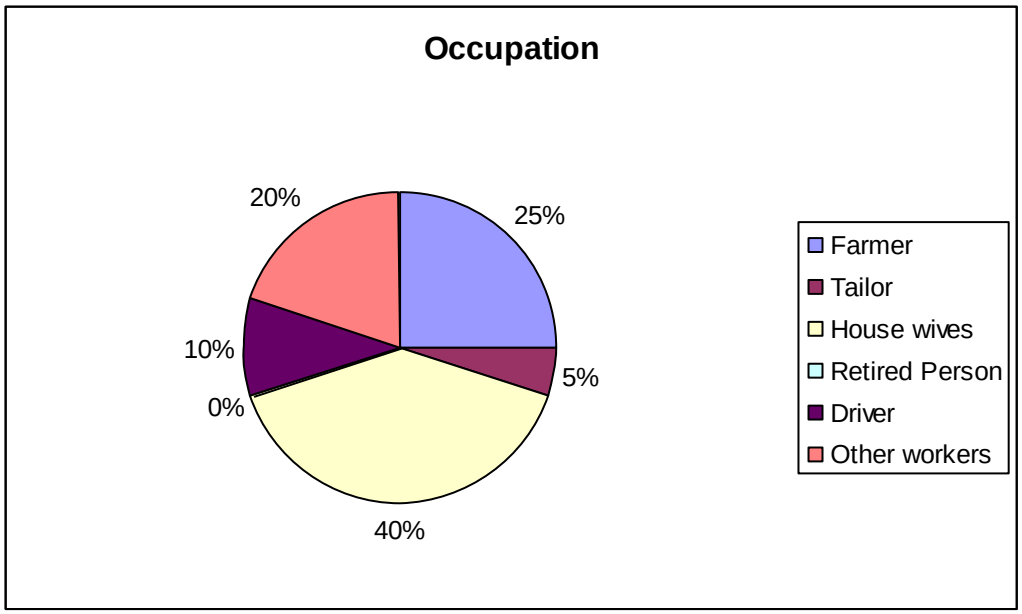
15.00% of Cases were coming from Neithal

Majority of the cases were coming from Marutha Nilam.

Table – VIII

OCCUPATION

Sl.No	Occupation	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Farmer	5	25	5	8.33
2.	Tailor	1	5	2	3.33
3.	House Wives	8	40	34	56.67
4.	Retired person	-	-	3	5
5.	Driver	2	10	4	6.67
6.	Other Workers	4	20	12	20



Out of 20 In-Patients

15% of patients worked as farmers

5% of patients worked as Tailor

40% of patients worked as House wives

10% of patients worked as Driver

20% of patients worked

Out of 60 Out-Patients

8.33% of patients worked as farmers

3.33% of patients worked as Tailor

56.67% of patients worked as House wives

5.00% of patients worked as Retired Person

6.67% of patients worked as Driver

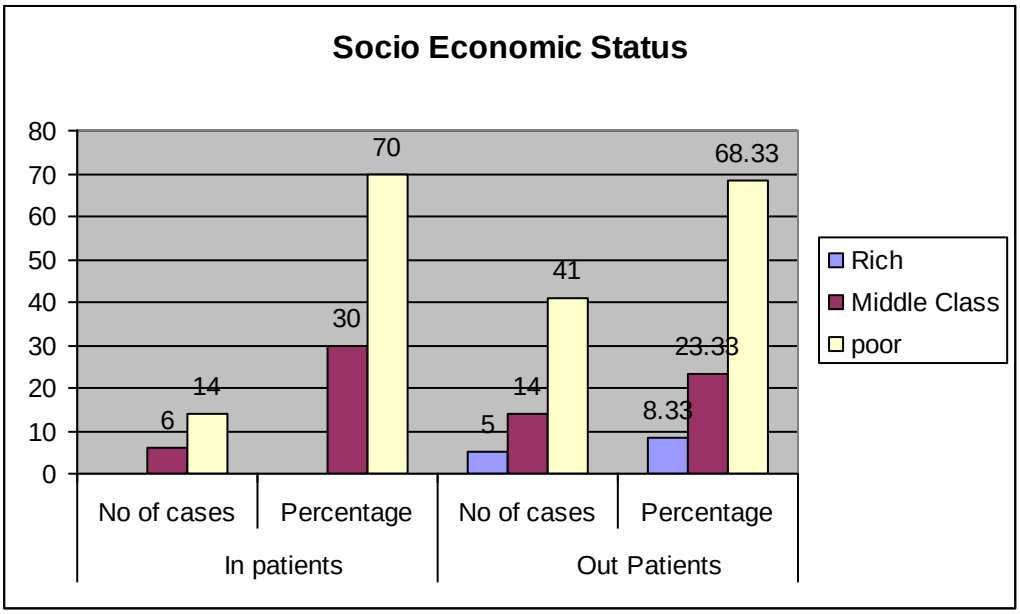
20.00% of patients worked

Majority of the cases worked as Housewives.

Table – IX

SOCIO-ECONOMIC STATUS

Sl.No	Socio Economic Status	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Rich	-	-	5	8.33
2.	Middle Class	6	30	14	23.33
3.	Poor	14	70	41	68.33



Out of 20 In-Patients

30% of cases belonged to Middle Class socio-economic status and 70% of cases belonged to Poor socio-economic status

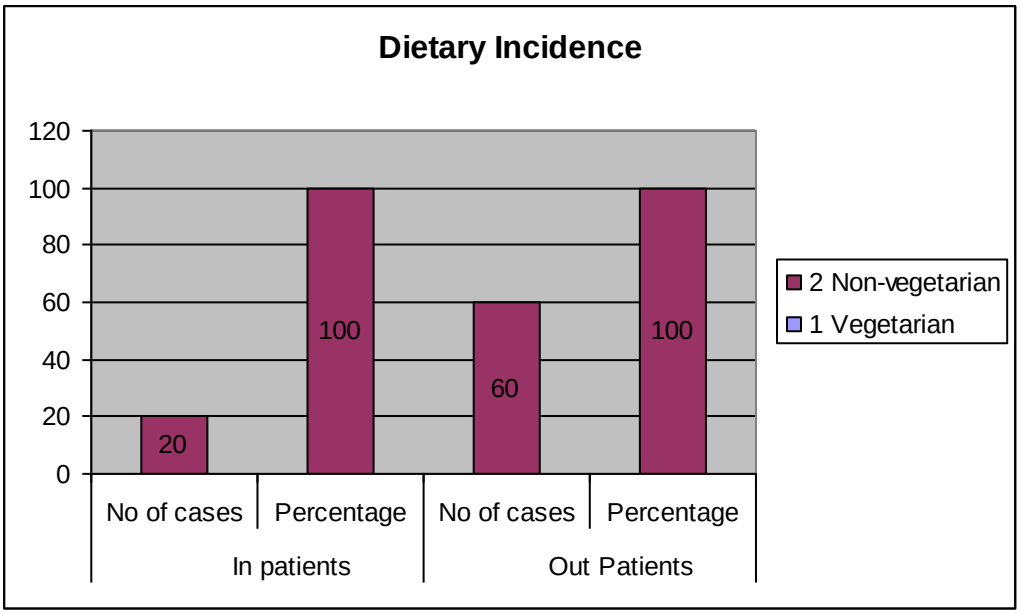
Out of 60 Out-Patients

8.33% of cases belonged to Rich socio-economic status, 23.33% of cases belonged to Middle Class socio-economic status and 68.33% of cases belonged to Poor socio-economic status

Table – X

DIETARY INCIDENCE

Sl.No	Dietary incidence	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Vegetarian	-	-	-	-
2.	Non-vegetarian	20	100	60	100



(Here the author considers all those taking milk as non-vegetarians)

Out of 20 In-Patients

All cases belonged to Non-Vegitarian

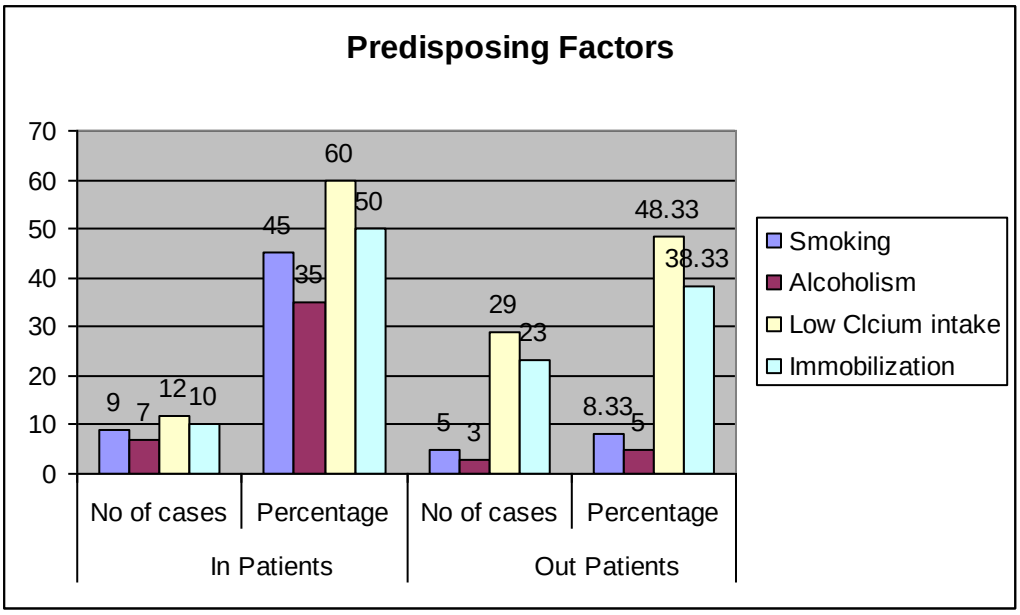
Out of 60 Out-Patients

All cases belonged to Non-Vegitarian

Table – XI

PREDISPOSING FACTORS :

Sl.No	Predisposing Factors	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Smoking	9	45	5	8.33
2.	Alcoholism	7	35	3	5
3.	Low Calcium intake	12	60	29	48.33
4.	Immobilization	10	50	23	38.33



Out of 20 In-Patients

45% had the history of smoking

35% had the history of Alcoholism

60% had the history of low calcium intake

50% had the history of Immobilization

Out of 60 Out-Patients

8.33% had the history of smoking

5% had the history of Alcoholism

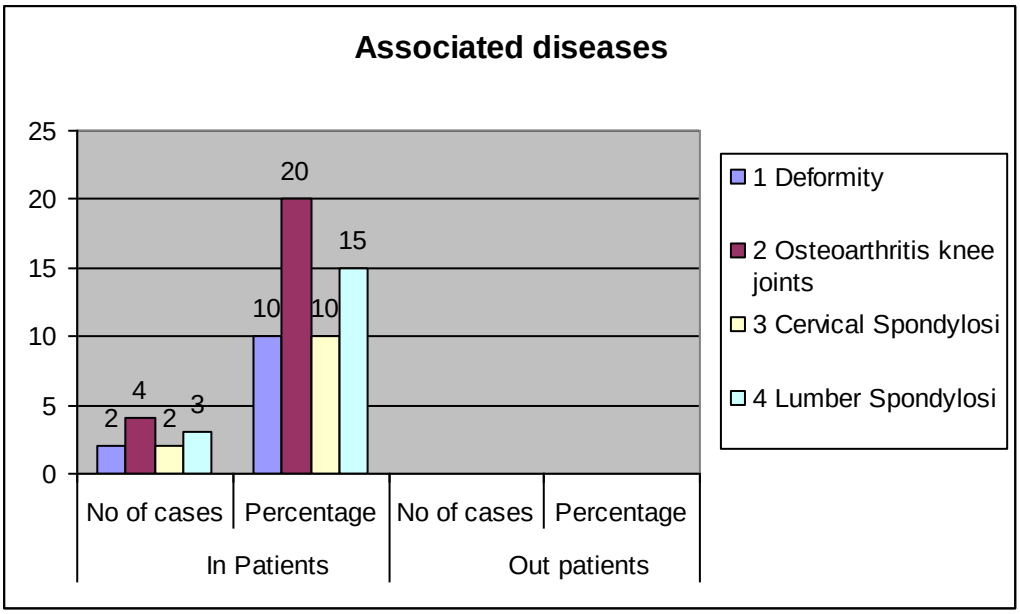
48.33% had the history of low calcium intake

38.33% had the history of Immobilization

Table – XI

ASSOCIATED DISEASES :

Sl.No	Associated Diseases	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Deformity	2	10	7	11.66
2.	Osteoarthritis knee joints	4	20	13	21.66
3.	Cervical Spondylosis	2	10	7	11.66
4.	Lumbar Spondylosis	3	15	6	10



Out of 20 In-Patients

10% had past history of Deformity

20% had past history of Osteoarthritis knee joints

10% had past history of Cervical Spondylosis

15% had past history of Lumbar Spondylosis

Out of 60 Out-Patients

11.66% had past history of Deformity

21.66% had past history of Osteoarthritis knee joints

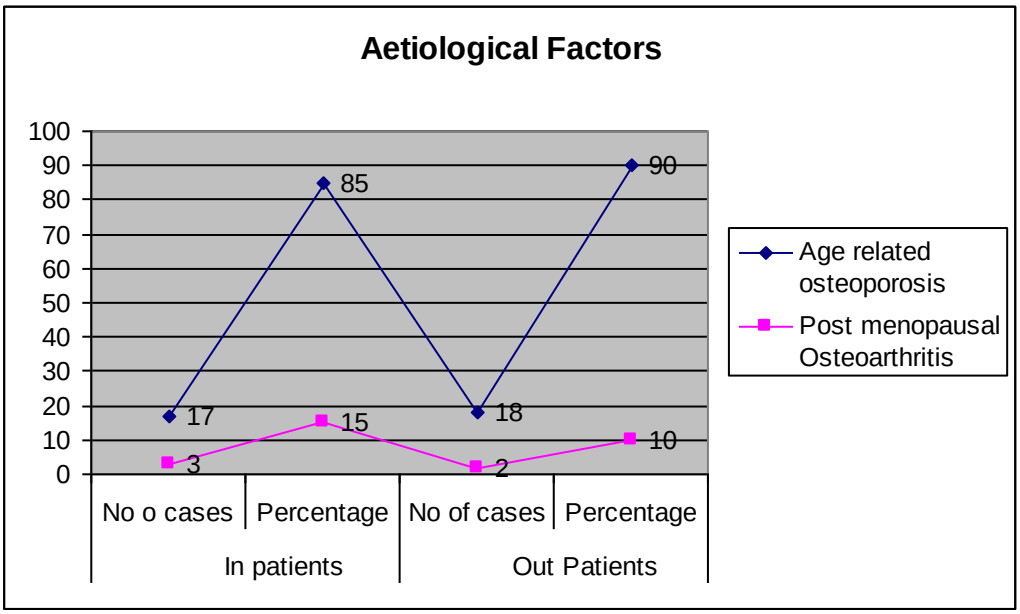
11.66% had past history of Cervical Spondylosis

10% had past history of Lumbar Spondylosis

Table – XII

AETIOLOGICAL FACTOR :

Sl.No	Aetiological factor	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Age related osteoporosis	17	85	18	90
2.	Post menopausal Osteoarthritis	3	15	2	10



Out of 20 In-Patients

85% of patients had age related osteoporosis

15% of patients had post menopausal osteoporosis

Out of 60 Out-Patients

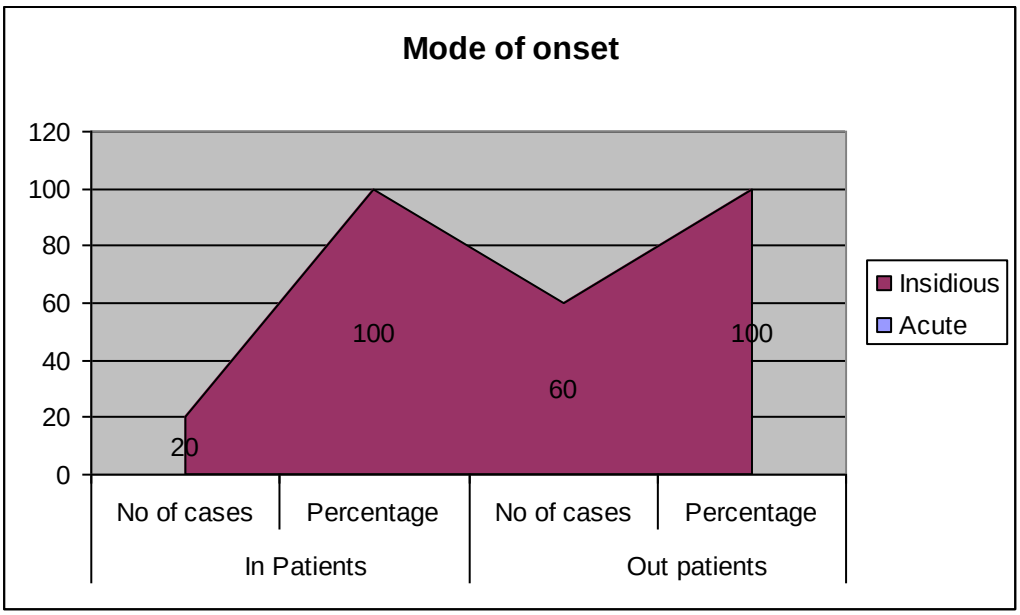
90% of patients had age related osteoporosis

10% of patients had post menopausal osteoporosis

Table – XIII

MODE OF ONSET :

Sl.No	Mode of onset	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Acute	-	-	-	-
2.	Insidious	20	100	60	100

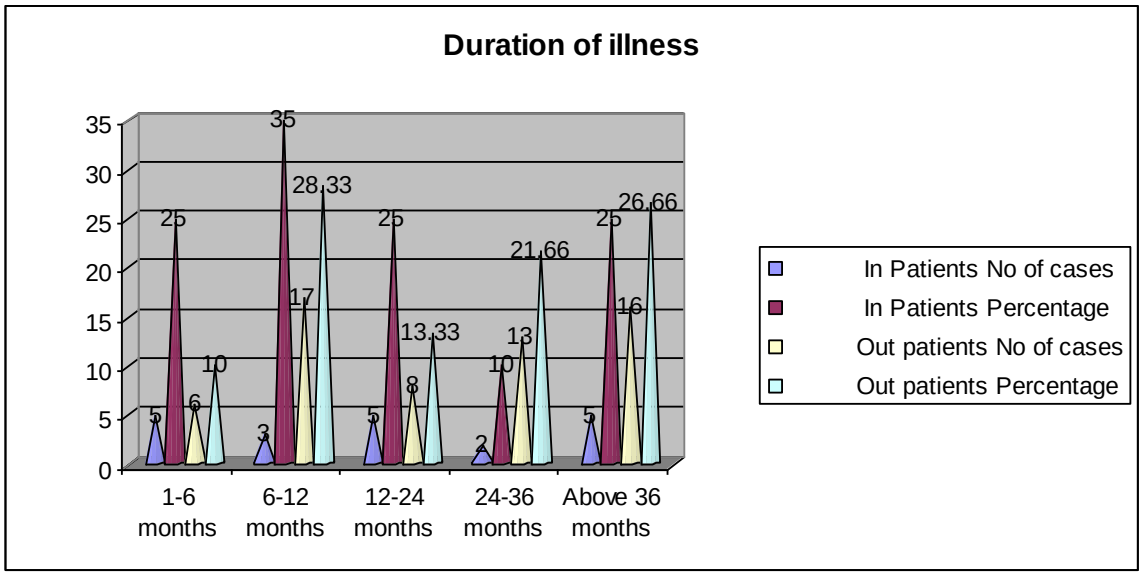


According to this study 100% of Cases had gradual onset of disease. Sudden onset was nil.

Table – XIV

DURATION OF ILLNESS :

Sl.No	Duration of illness	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	1-6 months	5	25	6	10
2.	6-12 months	3	15	17	28.33
3.	12-24 months	5	25	8	13.33
4.	24-36 months	2	10	13	21.66
5.	Above 36 months	5	25	16	26.66



Out of 20 In-Patients

25% of the patients had the duration of illness between 1-6 months.

15% of the patients had the duration of illness between 6-12 months.

25% of the patients had the duration of illness between 12-24 months.

10% of the patients had the duration of illness between 24-36 months.

25% of the patients had the duration of illness above 36 months.

Out of 60 Out-Patients

10% of the patients had the duration of illness between 1-6 months.

28.33% of the patients had the duration of illness between 6-12 months.

13.33% of the patients had the duration of illness between 12-24 months.

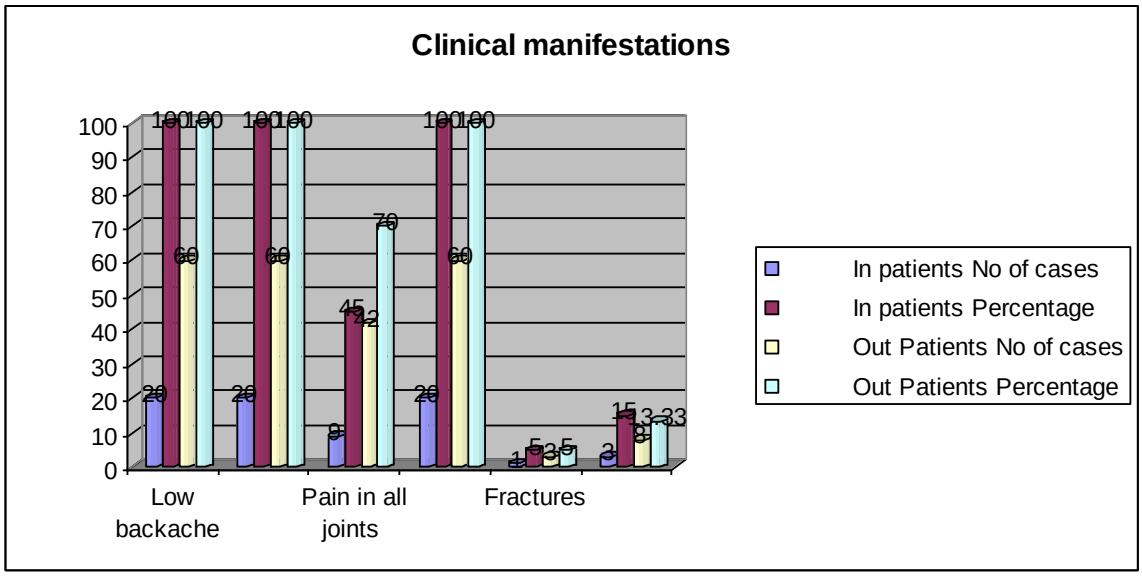
21.66% of the patients had the duration of illness between 24-36 months.

26.66% of the patients had the duration of illness above 36 months.

Table – XV

CLINICAL MANIFESTATIONS :

Sl.No	Clinical Manifestations	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Low backache	20	100	60	100
2.	Bony pain	20	100	60	100
3.	Pain in all joints	9	45	42	70
4.	Weakness of limbs	20	100	60	100
5.	Fractures	1	5	3	5
6.	Deformity	3	15	8	13.33



Out of 20 In-Patients

100% of the cases had Low backache, bony pain and weakness of limbs.

45% of the cases had Pain in all joints

5% of the cases had Fractures.

15% of the patients had Deformity

Out of 60 Out-Patients

100% of the cases had Low backache, bony pain and weakness of limbs.

70% of the cases had Pain in all joints

5% of the cases had Fractures.

13.33% of the patients had Deformity

Table – XVI

KOSANGAL :

Sl.No	Kosangal	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Annamaya Kosam	20	100	60	100
2.	Pranamaya Kosam	20	100	60	100
3.	Manomaya Kosam	20	100	60	100
4.	Vinganamaya Kosam	20	100	60	100
5.	Ananthamaya Kosam	-	-	-	-

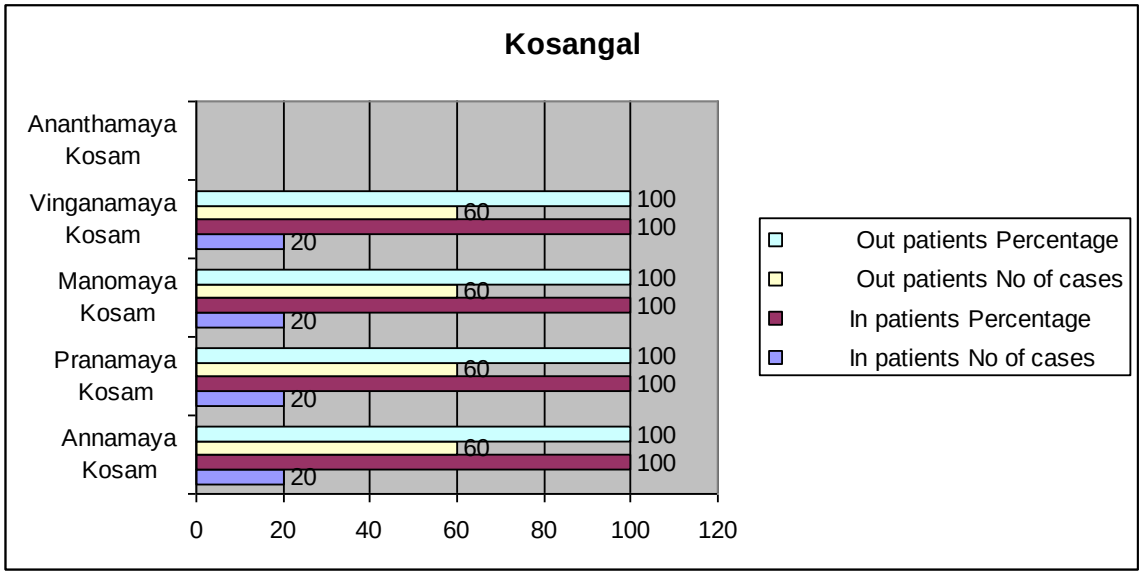

Kosangal
Ananthamaya Kosam
Vinganamaya Kosam
Manomaya Kosam
Pranamaya Kosam
Annamaya Kosam
100
60
100
20
100
60
100
20
100
60
100
20
100
60
100
20
0
20
40
60
80
100
120
Out patients Percentage
Out patients No of cases
In patients Percentage
In patients No of cases

Table – XVI

MUKKUTRAM : (a) Disturbances in vatha

Sl.No	Vatham	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Pranan	20	100	60	100
2.	Abanan	6	30	16	26.67
3.	Viyanan	20	100	60	100
4.	Udhanan	20	100	60	100
5.	Samanan	20	100	60	100
6.	Nagan	-	-	-	-
7.	Koorman	4	20	7	11.67
8.	Kirukaran	10	50	21	35
9.	Devthathan	7	35	18	30
10.	Dhananjeyan	-	-	-	-

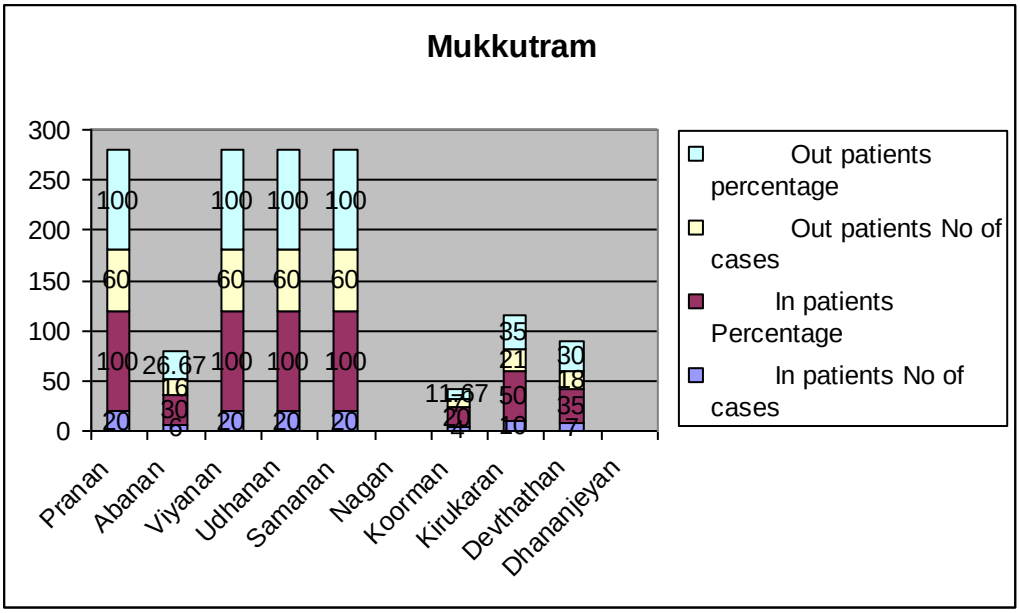

Mukkutram
300
250
200
150
100
50
0
100
60
100
20
26.67
16
30
8
100
60
100
20
100
60
100
20
100
60
100
20
11.67
7
20
4
35
21
50
10
30
18
35
7
Pranan
Abanan
Viyanan
Udhanan
Samanan
Nagan
Koorman
Kirukaran
Devthathan
Dhananjeyan
Out patients percentage
Out patients No of cases
In patients Percentage
In patients No of cases

Table – XVII

MUKKUTRAM : (b) Disturbances in Pitha

Sl.No	Pitha	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Anarpitham	9	45	28	46.67
2.	Ranjaga Pitham	8	40	26	43.33
3.	Prasaka Pitham	-	-	-	-
4.	Alosaga Pitham	08	40	15	25
5.	Santhaga Pitham	20	100	60	100

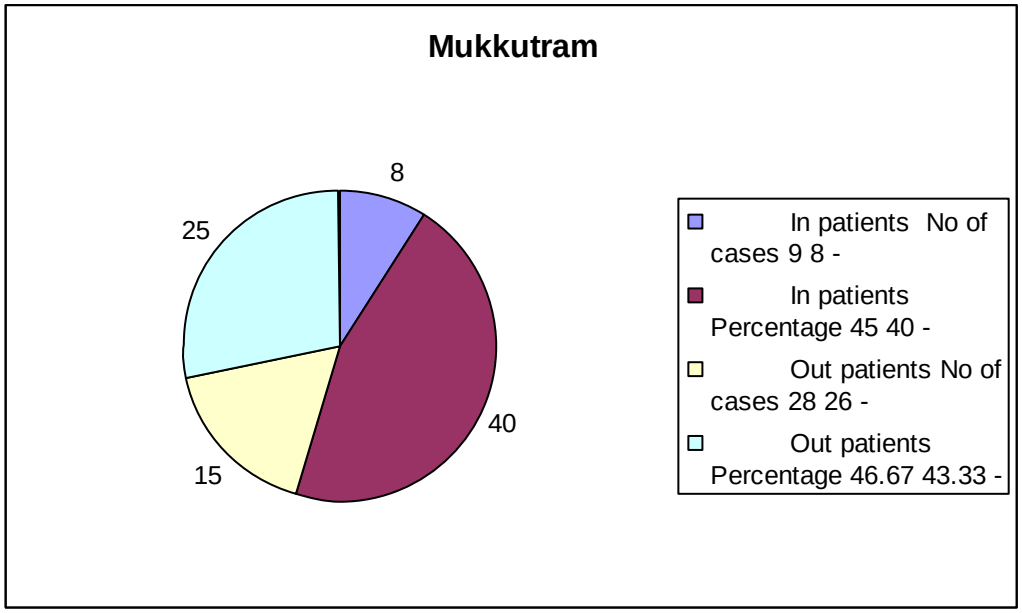

Mukkutram
8
25
40
15
In patients No of cases 9 8 -
In patients Percentage 45 40 -
Out patients No of cases 28 26 -
Out patients Percentage 46.67 43.33 -

Table – XVIII

MUKKUTRAM : (c) Disturbances in Kabha

Sl.No	Pitha	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Avalambagam	20	100	60	100
2.	Kilethagam	6	30	7	35
3.	Pothagam	-	-	-	-
4.	Tharpagam	-	-	-	-
5.	Santhigam	5	25	36	60

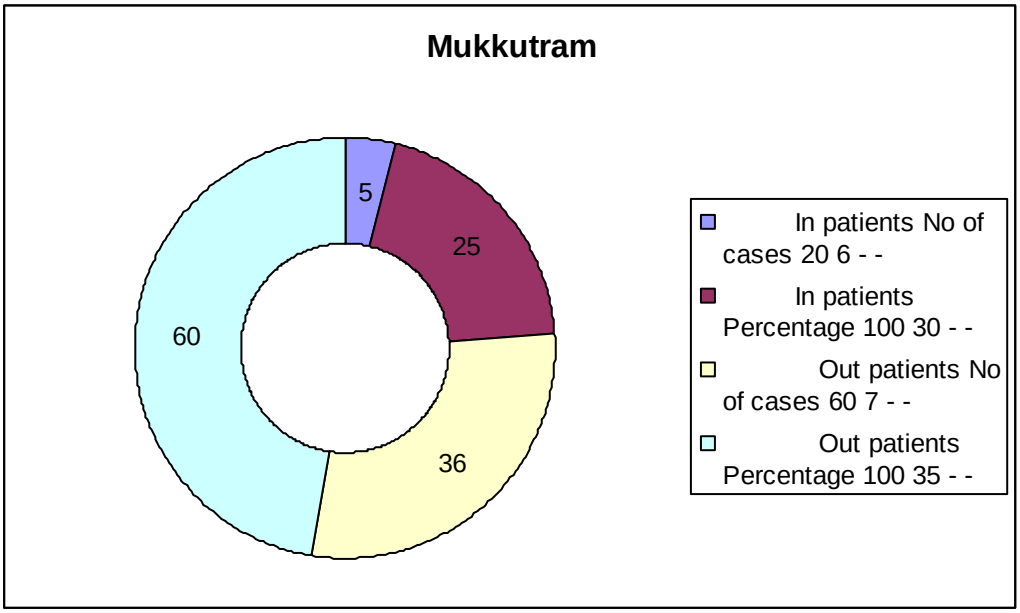


Table – XIX

INVOLVEMENT OF SEVEN UDAL THATHUKKAL :

Sl.No	Pitha	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Saaram	20	100	60	100
2.	Senneer	8	40	26	43.33
3.	Oon	20	100	60	100
4.	Kozhuppu	5	25	5	25
5.	Enbu	20	100	60	100
6.	Moolai	-	-	-	-
7.	Sukkilam / Sironitham	-	-	-	-

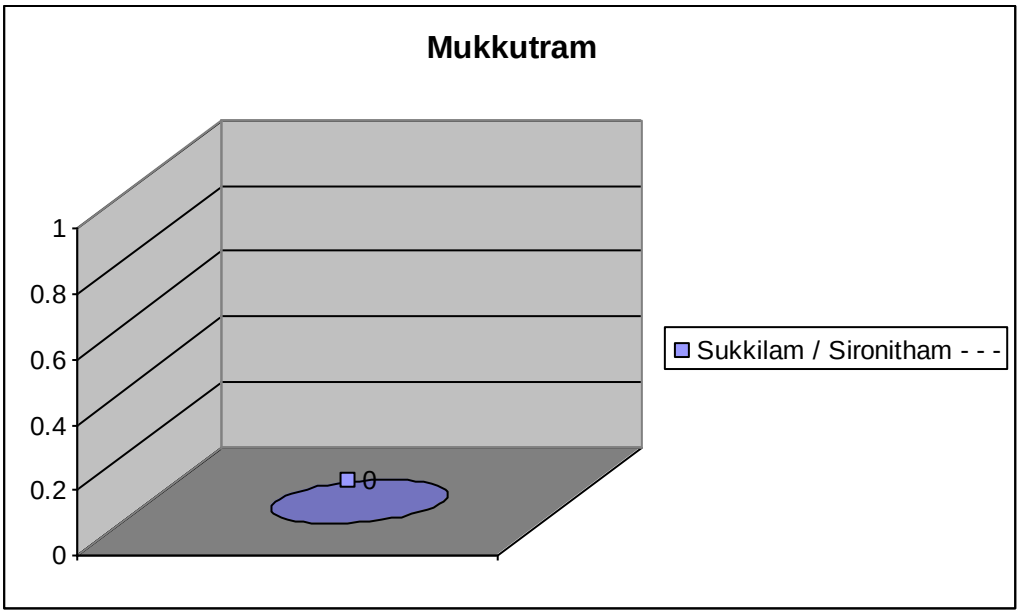


Table – XX

ENVAGAI THERVUGAL :

Sl.No	Envagi Thervugal		In patients		Out Patients	
			No. of cases	Percentage	No. of cases	Percentage
1.	Naadi	Vatha Pitham	20	100	60	100
2.	Sparisam		20	100	60	100
3.	Naa		20	100	60	100
4.	Niram		9	45	6	30
5.	Mozhi		-	-	-	-
6.	Vizhi		8	40	15	25
7.	Malam		6	30	24	40
8.	Moothiram		-	-	-	-

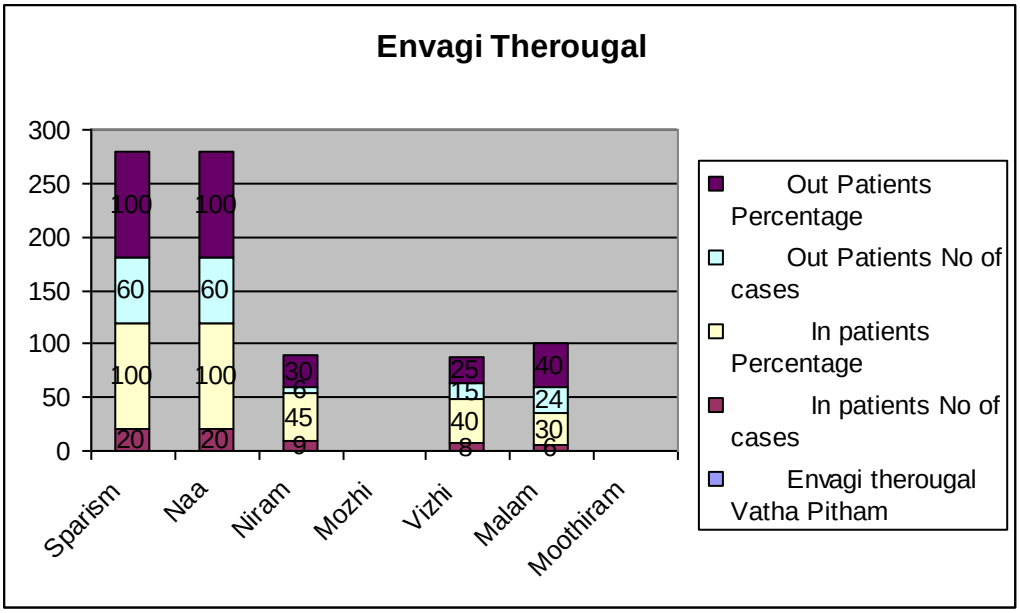

Envagi Therougal
300
250
200
150
100
50
0
100
60
100
20
100
60
100
20
30
6
45
9
25
15
40
8
40
24
30
6
Sparism
Naa
Niram
Mozhi
Vizhi
Malam
Moothiram
Out Patients Percentage
Out Patients No of cases
In patients Percentage
In patients No of cases
Envagi therougal Vatha Pitham

Table – XXI

SYMPTOMS :

Sn	Symptoms	In Patients						Out Patients					
		Mild		Moderate		Severe		Mild		Moderate		Severe	
		No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%
1.	Low backache	6	30	11	55	3	15	12	20	39	66	9	15
2.	Bony pain	4	20	9	45	7	35	15	25	20	33.33	25	41.66
3.	Pain in all joints	4	20	3	15	1	5	16	39	21	50	5	12
4.	Weakness of limbs	8	40	9	45	3	15	15	25	42	70	3	5

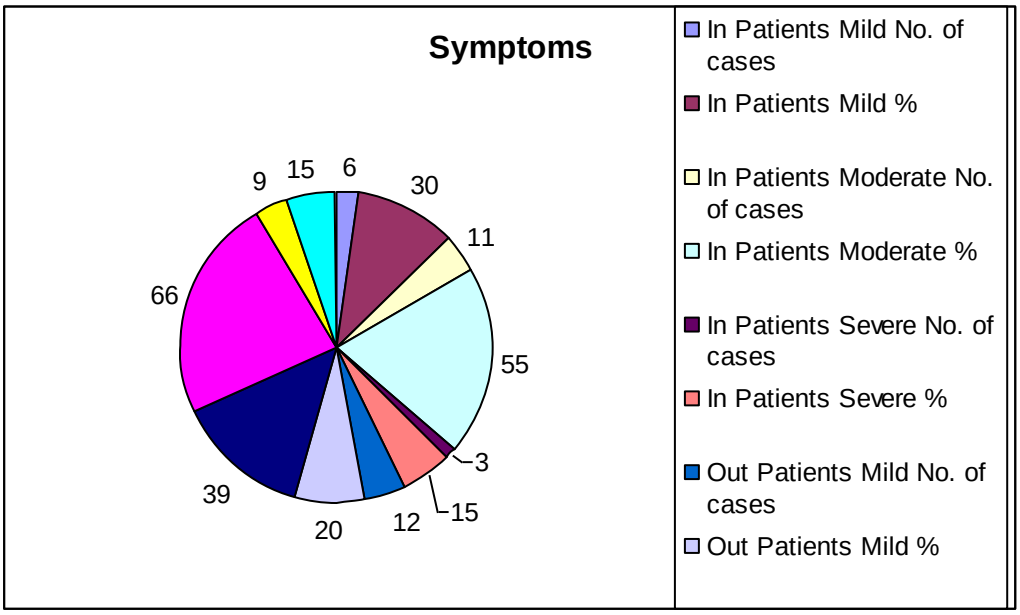


Table – XXII

ASSESSMENT OF RESULTS :

Sl.No	Result	In patients		Out Patients	
		No. of cases	Percentage	No. of cases	Percentage
1.	Excellent	-	-	2	3.33
2.	Good	7	35	39	65
3.	Moderate	13	65	17	28.33
4.	Poor	-	-	2	3.33
5.	Very Poor	-	-	-	-

DISCUSSION

Asthivatham, a disease classified under vatha diseases results in bone pain has been correlated with the osteoporosis in modern science.

Pirandai Vatakam mentioned in the Siddha formulatory of India and Siddha Vaithya thirattu has been chosen by me for the study on the disease Asthivatham for the Dissertation Purpose.

A camp was held for the purpose of diagnosing the patients and 80 patients were selected for the trial and consent has been obtained from them and trial was started, out of this, 20 patients were admitted in the government Siddha Medical College Palaymkottai in-patient department.

Before starting the trial, the Bio-chemical analysis and an Pharmacological actions of the drug was done in the laboratories of the government Siddha Medical College, Palayamkottai.

AGE:

The patients had undergone the trial belonged to different age groups from 30-80. The highest incidence was seen in the fifith decade and above.

SEX:

38.33% of the patients were males and 61.67% were females in the out patients.

In the In-patients 60% were males and 40% were females.

MUKKURAKAALAM:

80% of the inpatients and 86.67% of the outpatients were noted in the Pithakaalam and 20% of the inpatients and 13.33% of the outpatients were noted in the kabakaalam since ‘laghu’ of the bone occur after the age of 40. majority of the patients’ **incidence is from Pitha Kaalam.**

THEGI

60% of the inpatients and 56.67% of the outpatients were vathathegi 30 of the inpatients and 25% of the outpatients were Pithathegi 10% of inpatients and 18.33% of outpatients were kabathegi.

GUNAM

90% of the inpatients and 85% of the outpatients were hindus. 10% of the inpatients and 10% of the outpatients were Christians 0% of the inpatients and 5% of the outpatients were muslims.

THINAI

All the inpatients and 85% of the outpatients wee from Maruthanilam and 15% of the cases were from Neithal Nillam. In general Maruthanilam is the area where the severity of all the diseases is less. But this incidence may be due to the alteration in the food habit, stress, senile, lifestyle and other activities

OCCUPATION

25% of inpatients and 8.33 of outpatients were farmers 40% of the inpatients and 56.67 of the outpatients were housewives 5% of the

inpatients and 3.33% outpatients were tailors 10 of the inpatients and 10% of the outpatients were drivers 5% of the out patients were retired persons.

SOCIO-ECONOMIC STATUS:

30% of cases in patients belonged to Middle class and 70% cases belonged to poor section. ot of 60 Out patients 8.33% belonged to rich socio economic status, 23.33% Of cases belonged to poor socio economic status.

AETIOLOGICAL STATUS

85% of the inpatients and 90 of the outpatients had age related osteoporosis of the inpatients and of outpatients has post menopausal osteoporosis. Since the major risk factor of osteoporosis is advancement of age.

MODE OF ONSET

100% of the inpatients and outpatients has gradual onset of osteoporosis.

DURATION OF ILLNESS:

24 of the inpatients and 10 of the outpatients has the duration of illness between 1-6 months.

15% pf the inpatients and 29.33 of the outpatients has the duration of ill ness between 6-12 months.

25 of the inpatients and 13.33 of the outpatients has the duration of illness between 12-24 months.

13 of the In-patients and 21.66 of the out patients has the duration of illness 24-36 months.

25 of the Inpatients and 26.66% of the outpatients has the duration of illness above 3 years

.NUMBER OF DAYS TREATED:

15% of Inpatients were treated for 45 days.

45% of In-patients were treated for above 45 days.

All the Outpatients were treated for above 40 days.

CLINICAL MANIFESTATIONS:

100 Percentage of the In-patients and the Outpatients had low back ache bone pain, pain in all joints, weakness of limbs.

50% of the Inpatients and 60% of the Outpatients had pain in all joints

10% of the Inpatients and 35% of the Outpatient ha fractures.

15% of the Inpatients and 25% of the Outpatients had deformity.

ASSOCIATED DISEASES

10% of the IN-patients and 13.33% of Outpatients has deformities.

20% of the In-patients and 20 of Outpatients had arthritis knee.

10% of the Inpatients and 11.66% of Outpatients had lumbar spondylosis.

15% of the In-patients and 11.66% of out patients had cervical spondylosis

DIET FACTORS:

100% of the inpatients and Outpatients were Non-vegetarians. (Here I consider all those takes milk as non-vegetarians).

PREDISPOSING FACTORS:

According to this study 45% of the Inpatients and 8.33 of the Outpatients has this disease due to smoking 35 of the Inpatients and 5% of Outpatients had alcoholic history 60% of Inpatients had the history of low calcium intake and immobilization 49.33 of Outpatients had the history of low calcium intake and 50% of the inpatients and 38.33% of Outpatients had the history of immobilization.

KOSANGAL:

Except the annantha Maya Kosam, Annamya kosam, Pranamaya kosam, manomayakosam, vignanamayakosam all were affected in 100% of the inpatients and 100% of the Outpatients.

DISTURBANCES IN VATHA:

Derangement of Praanan was found in cent percent of In-patient and Out-patients.

Affected Praanan produced indigestion.

Derangement of Abanan was found 30% of inpatients and 26.67% the Outpatients.

Affected Abanam produced constipation.

Derangement of Viyam was found in 100% of inpatients and 100% of the Outpatients.

Affected Viyanan produces pain in the bones.

Derangement of udhanan is found in all patients

Derangement of samanan was found in 100% of the inpatients and 100% of the Outpatients.

Affected Samanan produced loss of appetite and indigestion.

Nagan is not found to be affected in all patients.

Derangement of Koorman was found in 20% of the inpatients and 11.67% of the Outpatients.

Affected Koorman produced disturbance in vision.

Derangement of Kirukan was found in 50% of the inpatients and 35% Outpatients.

Affected Kirukaran produced indigestion.

Derangement of Devathathan was found in 50% of the inpatients and 35% of inpatients and 30% of the Outpatients.

Devathathan affected normal sleep rhythm.

Disturbances in pitha:

Anarpitham was affected in 45% of the inpatients and 46.67% of the Outpatients.

Affected Anarpitham produced loss of appetite and indigestion.

Ranjaga pitham was affected in 40% of inpatients and 43.33% of the Outpatients,

Affected Ranjaga pitham results in decreased haemoglobin presence in the blood.

Alosaga pitham was affected in 40% of the Inpatients and 25% outpatients.

Affected Alosaga pitham produced disturbances in vision.

Saathaga pitham was affected in 100% of inpatients and Outpatients.

Affected Saathaga Pitham produced inability to do usual works.

Disturbances in Kabha:

Avalambagam was affected in 100% of Inpatients and Outpatients affected Kilethagam produced loss of appetite and indigestion.

Santhigam was affected in 25% of Inpatients and 60% of Outpatients. Affected Santhigam produced pain in the joints and restriction of movements.

Involvement of seven udal thathukkal:

Saaram was affected in all the inpatients and outpatients and produces the patients fatigue. senneer was affected in 45% of the inpatients and 43.33% of the outpatients which produces pain and low haemoglobin concentration.

Oon was affected in all the inpatients and outpatients which produces muscle weakness.

Enbu was affected in all the inpatients and the Outpatients which produces bone pain and pain in joints.

Kozhuppu was affected 25% of the Inpatients and Outpatients which produces restricted movements.

Moolai and sukkilam were not found to be affected.

Envagai thervugal

Naadi : In 100% of inpatients and Outpatients the naadi was vatha pitham

Sparisam : was affected in 100% of Inpatients and Outpatients.

Naa : Was affected in 100% of inpatients and outpatient Tongue was coated and pale in color due to and constipation.

Mozhi : Was normal.

Vizhi : Was affected in 40 of inpatients and 25 of outpatients and disturbances in vision.

Moothiram : Was normal, neerikuri was neikuri were done in all the inpatients and outpatients neerkuri was found to normal, neikuri showed that the

oil dropped into the urine was spreading like snake. (vatha neer) and also pitha neer found.

Gradation of back pain, bony pain, pain in all joints in all joints , weakness of limbs:

30% of inpatients and 20 Outpatients had mild back pain.

55% of Inpatients and 66% of Outpatients had moderate back pain 15 of inpatients and 15 of outpatients and severe back pain.

20% of inpatients and 25% of outpatients had mild bony pain 45% of in-patients and 66 of outpatients had severe bone pain.

20% of inpatients and 38 outpatients had mild pain in all joints.

15 % of inpatients and 50% of outpatients had moderate pain in joints. And

5% of inpatients and 12% of inpatients had severe pain in joints.

40% of inpatients and 25% of outpatients had mild weakness of limbs 45% of inpatients and 70% of Outpatients had moderate weakness of limbs and 15% of the inpatients and 5% outpatients had severe weakness of limbs.

Laboratory investigations:

As in Asthivatham, the deciding factors is the Bone mineral density, the focus has been given to the BMD investigation before and after treatment. All the other Investigations like Xray, haematological and urological tests also done:

Management:

Every patient was advised to take Agathiyar Kulambu for Purgation to bring the vitiated into normal prior to the treatment.

Then the internal trial medicine pirandai vatakam with milk was given thrice a day after food. No adverse reactions developed during the entire periods of study.

Assessment of Results:

3.33% of outpatients showed excellent results

75% of the inpatients and 78.66% out patients showed good response, 25 the inpatients and 16.66% of the outpatients showed moderate response and3.33% of the inpatients showed poor response.

At the end of the treatment the patients were discharged and they are advised to take medicines from the Outpatient of sirappu Maruthuvam for their further follow up.

During the entire trial was each patient was advised to follow balanced diet and good moral behavior.

The mean value of the increased BMD due to the intake of calcium in the 40 patients is (9.5 divided by 40) 0.2375.

The mean difference of the increased in the patients of the trial of pirandai vatakam is (48.9 divided by 80) 0.61125.

It shows that comparatively pirandai vatakam has a good effect in asthivatham.

Bone densitometry report - OP patients (Pirandai Vatagam)

BMD (gm / cm^2) - T Score

Sl. No	OP No	Name	Age	Sex	Before Treatment	During Treatment	After Treatment
1	74072	Servarayan	65	M	-4.5	-4.1	-3.8
2	73048	Subramanian	66	M	-1.4	-1.1	-1.0
3	74086	Sahul Hameed	42	M	-1.5	1.2	-1.1
4	74090	Aavudayappan	70	M	-1.9	-1.5	-1.1
5	71605	Murugan	60	M	-1.8	+0.7	-
6	74145	Karunagaran	53	M	-1.8	-1.4	-1.2
7	74136	Blasubramani	59	M	-2.5	-2.0	1-6
8	70940	Subramanian	60	M	-3.5	-3.3	-3.0
9	74133	Murugan	55	M	-1.7	-1.3	-0.9
10	63484	Paramasivam	55	M	-2.6	-2.4	-2.4
11	74155	Abdul Jaleel	46	M	-2.2	-2.0	-1.5
12	74089	Beer Mohmmed	36	M	-2.6	-2.2	-1.7
13	74167	Selvaraj	48	M	-5.1	-4.8	-4.5
14	74196	Subbiah	39	M	-2.1	-1.8	-1.3
15	63878	Selvaraj	53	M	-2.7	-2.5	-2.4
16	74199	Ramakrishnan	57	M	-2.1	-1.8	-1.4
17	74237	Chandra sekar	56	M	-1.2	-1.1	-1.0
18	74210	Rangan	50	M	-2.3	-1.3	-1.2
19	67644	Sekar	39	M	-1.8	-1.8	-1.9
20	52712	Pandaram	42	M	-1.6	-1.2	-0.8
21	74456	Isak	36	M	-2.0	-1.5	-1.1
22	74567	Panneer Selvam	59	M	-3.0	-3.0	-2.5
23	74618	Nallakannu	65	M	-3.1	-2.7	-2.1
24	73162	Saraswathi	45	F	-2.0	-1.8	-1.5
25	74037	India	58	F	-1.1	-1.0	-0.8
26	65521	Saratha	60	F	-2.3	-2.0	-1.8
27	74066	Chandra sekar	62	F	-3.7	-3.4	-2.9
28	72471	Sundari	53	F	-1.4	-1.1	-0.9
29	74087	Thangam	42	F	-2.9	-2.7	-2.5
30	74081	Parvathi	56	F	-2.6	-2.4	-2.4
31	74114	Loordhu	65	F	-2.8	-2.5	-2.1
32	74095	Gomathi	65	F	-3.1	-3.0	-3.2
33	74084	Lily Pushpam	74	F	-3.3	-3.1	-2.9

34	74139	Petchiammal	65	F	-2.4	-0.5	-0.9
35	62284	Muppidathi	42	F	-1.3	-1.2	-1.0
36	74172	Pushpam	58	F	-4.1	-4.0	-3.8
37	74166	Malliga	38	F	-4.4	-4.1	-3.7
38	74194	Susila	54	F	-3.2	-3.1	-2.8
39	74162	Kuruvammal	50	F	-2.7	-2.4	-2.3
40	74128	Thayammal	68	F	-3.1	-2.8	-2.7
41	74221	Parvathi	65	F	-4.1	-3.8	-3.5
42	74208	Aarumugam	46	F	-3.5	-3.3	-3.0
43	74244	Ratakani	62	F	-3.3	-2.9	-2.6
44	74251	Madathi	75	F	-4.8	-4.5	-4.0
45	74254	Chitra	61	F	-3.6	-3.1	-3.0
46	73516	Lakshmi	75	F	-3.9	-3.6	-3.1
47	73514	Panchavarnam	70	F	-3.9	-3.7	-3.3
48	74279	Vasantha	62	F	-5.2	-5.0	-4.6
49	74287	Geetha	35	F	-1.9	-1.6	-1.3
50	74212	Azhagammal	70	F	-3.7	-3.6	-3.3
51	74301	Lakshmi	66	F	-3.9	-3.6	-3.2
52	74305	Shanthi	55	F	-2.1	-1.2	-0.5
53	74345	Sivagami	72	F	-2.7	-2.5	-2.2
54	74359	Jebarani	49	F	-1.9	-1.5	-1.4
55	66160	Sundari	54	F	-3.5	-3.1	-2.8
56	74413	Saraswathi	55	F	-3.0	-2.7	-2.6
57	72337	Parvathi	53	F	-2.5	-2.2	-2.1
58	74469	Parvathiammal	58	F	-2.9	-2.3	-2.1
59	74303	Aavudayappan	47	F	-2.2	-1.7	-1.5
60	74286	Lakshmi	65	F	-1.5	+0.3	+0.2

Bone densitometry report - IP patients (Pirandai Vatagam)

BMD (gm / cm^2) - T Score

Sl. No	OP No	Name	Age	Sex	Before Treatment	During Treatment	After Treatment
1	3312	Servarayan	56	M	-4.5	-4.3	-4.0
2	3377	Samy	67	M	-2.1	-1.9	-1.5
3	3393	Saravnan	36	M	-1.7	1.5	-1.3
4	3337	Muthu	45	M	-3.2	-2.9	-2.5
5	3310	Murugan	65	M	-3.5	-3.2	-2.9
6	3452	Joseph	70	M	-5.1	-4.8	-4.3
7	3421	Aarumugam	54	M	-4.3	-4.1	-3.9
8	3621	Mayaandi	75	M	-2.8	-2.5	-2.1
9	3344	Muthiah Konar	76	M	-1.5	-1.3	-1.2
10	3425	Ambigambal	60	F	-3.2	-3.0	-2.8
11	3791	Muthu Karupan	65	M	-1.9	-1.5	-1.0
12	3629	Pandaram	53	M	-2.0	-2.0	-1.8
13	3512	Venkateswaran	60	M	-1.8	-1.5	-1.3
14	3365	Lakshmi	57	F	-3.3	-3.1	-2.7
15	3652	Muthusamy	63	M	-5.1	-4.9	-4.6
16	3175	Petchiammal	48	F	-2.0	-1.8	-1.8
17	3263	Pappa	40	F	-3.0	-2.8	-2.5
18	3123	Karpagam	43	F	-2.9	-2.5	-2.3
19	3477	Chellammal	55	F	-3.8	-3.7	-3.4
20	3238	Meenakshi Ammal	64	F	-5.6	-5.4	-5.0

Bone densitometry report - OP patients (Standard Drug)

BMD (gm / cm^2) - T Score

Sl. No	OP No	Name	Age	Sex	Before Treatment	During Treatment	After Treatment
1	74237	Chandra sekaran	56	M	-1.2	-1.2	-1.0
2	74232	Rajan	46	M	-2.0	-2.0	-1.8
3	74242	Manikkam	49	M	-1.9	1.8	-1.5
4	74275	Muthumalai	58	M	-3.3	-3.3	-3.0
5	74259	Muthukrishnan	62	M	-1.8	-3.3	-1.5
6	74267	Chellappa	62	M	-2.1	-1.8	-1.8
7	74313	Panneer Vel	57	M	-1.5	-2.0	1.2
8	74296	Agastin Jeyakumar	35	M	-2.1	-1.5	-2.0
9	74302	Ponraj	60	M	-1.8	-2.2	-1.5
10	72509	Muthukaruppan	63	M	-1.9	-1.6	-1.5
11	74346	Sellappa	58	M	-2.2	-1.9	-2.1
12	74365	Subbiah	57	M	-1.8	-2.0	-1.5
13	74400	AyyaPillaiar	70	M	-2.0	-1.7	-1.5
14	74450	jeccab	50	M	-2.5	-2.0	-2.2
15	74488	Sethu Subramani	45	M	-1.5	-2.4	-1.1
16	74508	Balaguru	65	M	-1.5	-1.3	-1.1
17	74510	Lakshmanan	70	M	-4.3	-4.3	-4.2
18	74525	Chidhambaram	52	M	-1.6	-1.5	-1.3
19	74528	Murugan	30	M	-1.7	-1.4	-1.2
20	74532	Muthu Krishnan	51	M	-2.1	-2.0	-1.8
21	74065	Sundari	55	F	-1.5	-1.5	-1.3
22	74121	Glory	67	F	-1.8	-1.7	-1.5
23	74141	Lakshmi	25	F	-2.2	-2.2	-2.0
24	70540	Kannammal	65	F	-1.7	-1.7	-1.5
25	74135	Aavudaiammal	47	F	-2.2	-2.2	-2.0
26	74179	Rajammal	60	F	-2.3	-1.7	-2.1
27	74211	Aamina	57	F	-1.3	-2.2	-1.4
28	74208	Aarumugam	46	F	-3.5	-2.3	-3.1
29	51651	Gnanarathinam	52	F	-1.6	-1.3	-1.4
30	73312	Saraswathi	57	F	-1.7	-3.5	-1.5
31	74239	Lakshmi	60	F	-1.4	-1.3	-1.1
32	74271	Vasnathi	52	F	-2.1	-2.1	-2.0
33	74300	Arputh Mery	80	F	-2.0	-2.1	-2.0

34	74301	Letchmi	66	F	-3.9	-3.8	-3.6
35	74304	Annalakshmi	65	F	-1.5	-1.5	-1.5
36	74305	shanthi	55	F	-2.1	-2.0	-2.0
37	74407	L. Shanthi	50	F	-1.6	-1.5	-1.3
38	74408	Tamil Selvi	50	F	-1.5	-1.5	-1.3
39	74413	Saraswathi	55	F	-3.0	-3.0	-3.0
40	74504	Seethaiammal	40	F	-2.2	-2.1	-2.0

SUMMARY

Asthivatham which can be correlated with osteoporosis is selected for the clinical trial for the purpose of dissertation by the internal medicine pirandai vatakam, to see its efficiency in this diseases.

80 patients were selected for this trial with their consent.

20 patients out of this were admitted in the Hospital and underwent the trial.

Before starting the treatment, the medicine underwent the lab investigations for biochemical analysis and pharmacological actions.

The patients were prepared by undergoing ‘Bethi’ to normalize the elevated vatham.

40 more patients were administered with standard drug (calcium).

All the results in all aspects were analyzed and discussed.

The comparative discussion of the results of the pirandai vatakam and calcium also done.

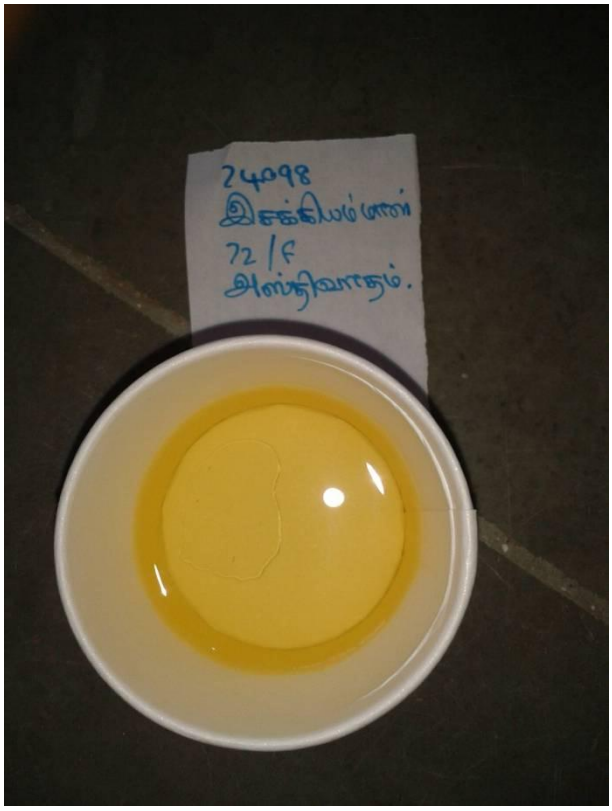
CONCLUSION

The Clinical trial by me for the Asthivatham in the internal medicine Pirandai Vathakam at Governement Siddha Medical College found to be satisfactory in 98% of cases.

The trial drug was absolutely free from adverse reactions. The trial medicine has significant analysis and good anti inflammatory activities.

Biochemical analysis of Pirandai Vatakam showed the presence of calcium, Chloride, starch, ferrous iron, Tannic and, unsaturated compound, and Amino acid.

As Asthivatham is a diseases characterized by reduced bone mineral density leading to pain and disability, the symptoms and the risk of fractures can be reduced and the quality of life can be improved after the administration of the trial during Pirandai Vatakam.


74098
72/F
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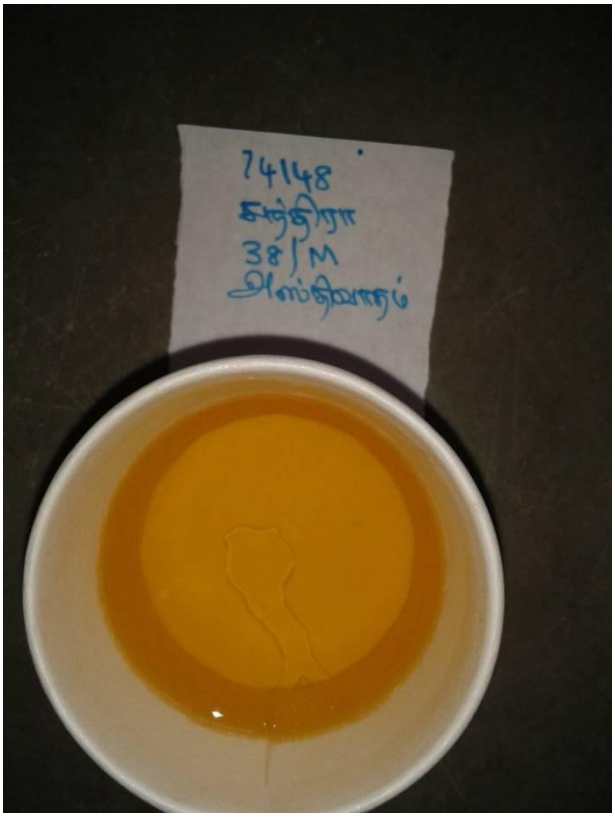
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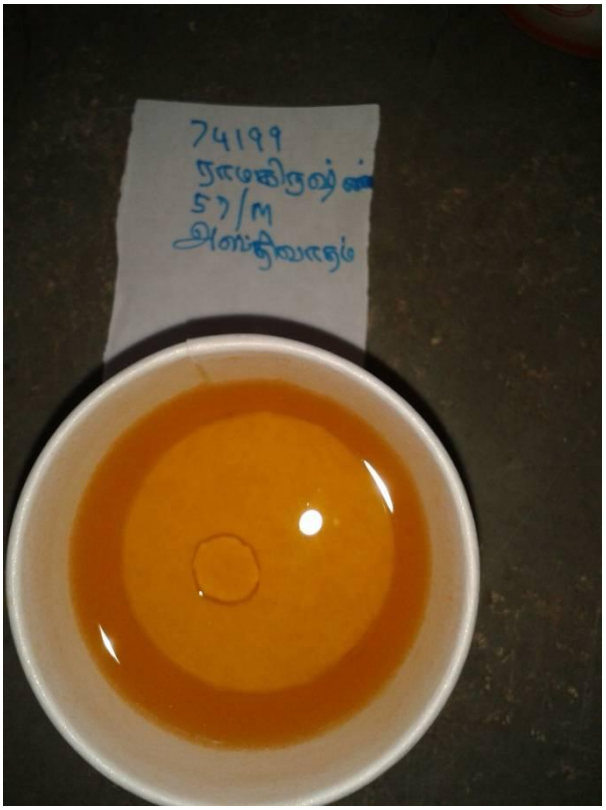
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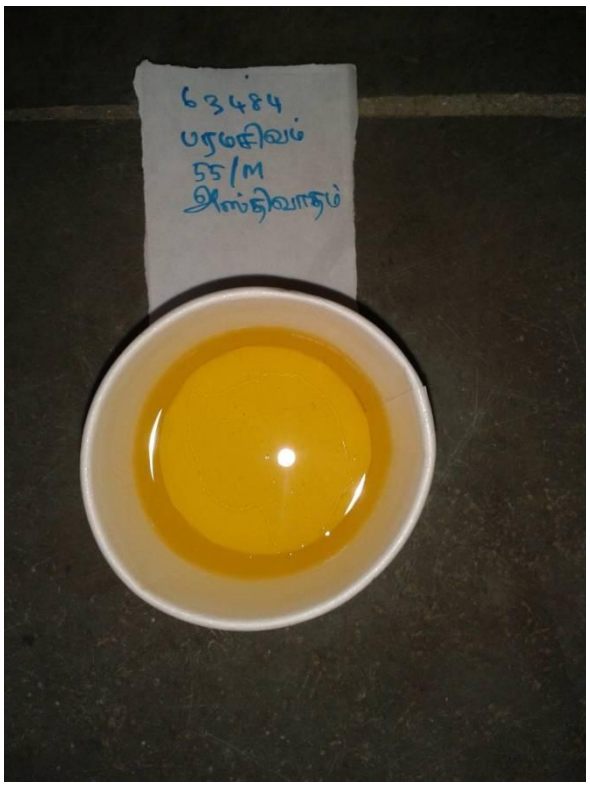
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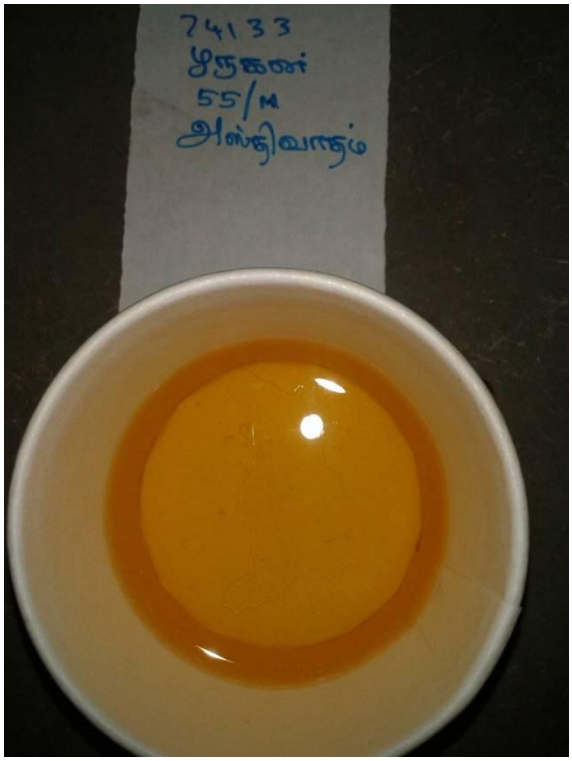
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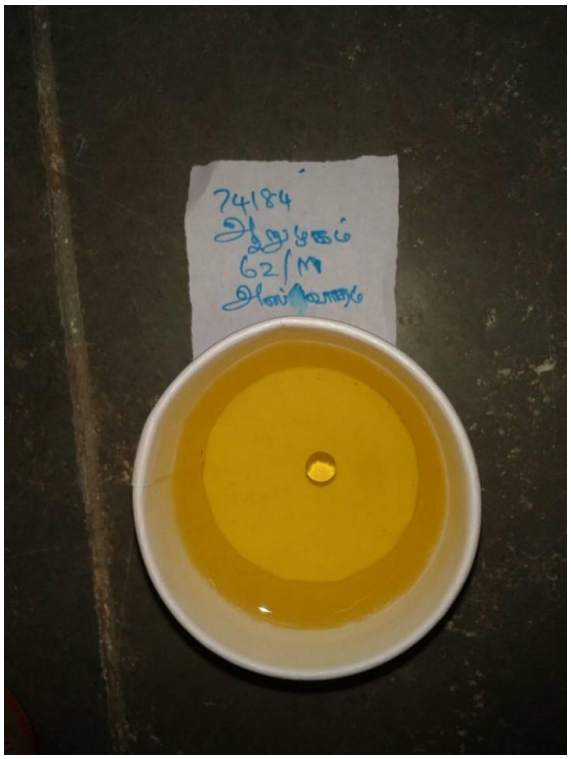
முருகன்
55/M
அல்சிவாதம்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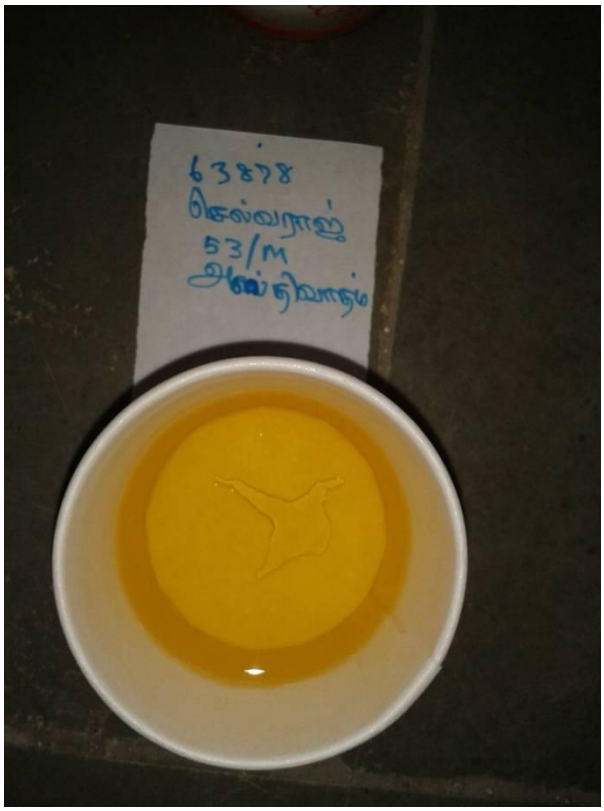
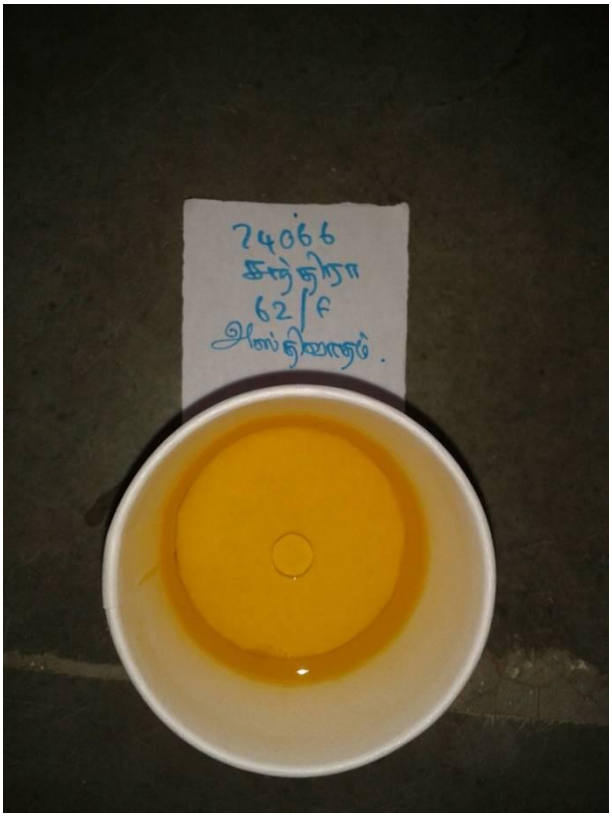
அழகுகம்
62/M


63878
செல்வராஜ்
53/M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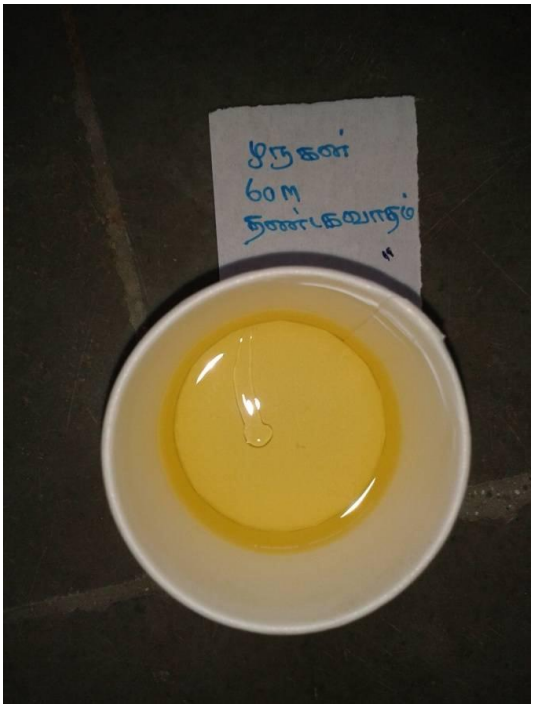
62/F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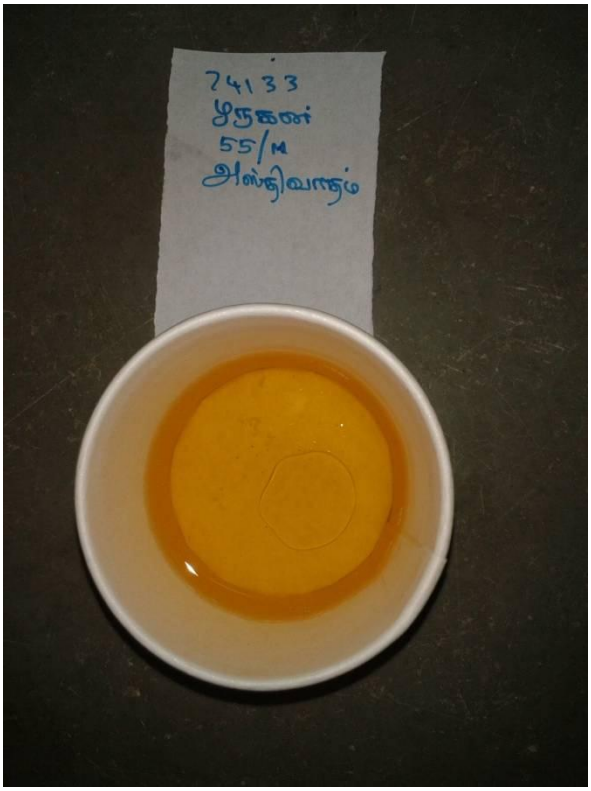
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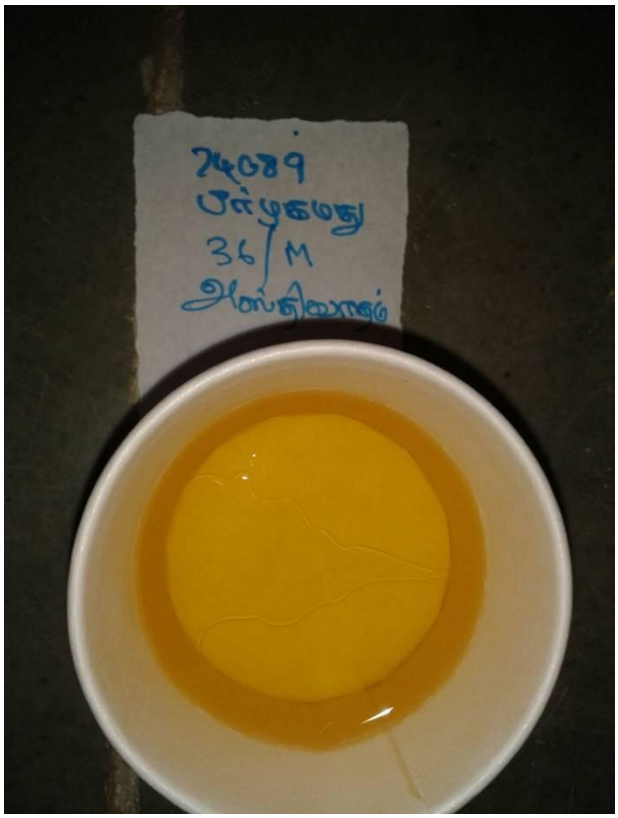
55/M


74089
36/M

ANNEXURE – I

PREPARATION OF MEDICINE

PIRANDAI VATAKAM

INGREDIENTS:

1.Pirandai -350 grms

(root of *Cissus* quadrangularis)

2.Kadukkaai thol -35 grms

(terminalia chebula)

3.Sukku -35 grms

(zingiber officinalis)

4.Kollu -35 grms

(macrotyloma uniflorum)

5.manjal - 35 grms

(curcuma longa)

6.Milaku - 35 grms

(piper nigrum)

7.vellaip poondu - 35 grms

(allium sativum)

8.seeraham - 35 grms

(cuminum cyminum)

9.vaaivilangam - 35 grms

(emblica ribes)

10. Inthuppu - 35 grms

11.ulunthu -35 grms

(vigna mungo)

12. puliththa kaadi -sufficient quantity

13. more (butter milk) - sufficient quantity

Method of Preparation:

Remove the skin from item 1 by scraping, split the pieces and put in a container. Pour enough of item 13 to submerge the pieces. keep in sun for two days and dry so that the slime disappears. Pound it finely, Grind drugs 2 to 11 with item 12 add with more of item 13 and dry in sun. Mix into the pounded Pirantai and make small lumps(10 gms).

PROPERTIES OF THE DRUGS

1. பிரண்டை - Cissus quadrangularis

   ப.உ. தண்டு

   சுவை - தன்மை - பிரிவு :

   கார்ப்பு - வெப்பம் - கார்ப்பு

   குணம் :

   "மாந்தம் வயிற்றுவலி வாயுவதி சாரமுளை

   சேர்ந்த மூலங்கபமூட் செம்புனற்போக் - கோய்ந்த நடை

   யெல்லா மகலும் எழும்பும் அதிகபசி

   மல்லார் பிரண்டையுண்டு வா"

   பிரண்டையால் கால் ஓய்ச்சல் முதலியன தீரும்

Active Ingredient:

Ketosterones 1.5%, Ketosterones 2% & Ketosterones 2.5%

Ketosterones : 1. It acts as antagonists to the glucocorticoid receptor and promote good bone health. 2. It shows anabolic steroid properties for healing of fracture. 3. It increases intramuscular creatinine levels. 4. It blocks the muscle damaging effect of cortisol and leads to the formation of new muscles. 5. It shows significant inhibition in DPPH free radical formation, superoxide radical production and lipid peroxide production in erythrocytes. 6. It shows sedative effect on central nervous system. 7. It protects gastric mucosa against ulceration by its

antisecretory and cytoprotective property. 8. It mobilizes fibroblast and chondroblasts to an injured tissue and enhances regeneration.

2. சுக்கு ___ Zingiber officinale

ப.உ கிழங்கு (உலர்ந்தது)

சுவை ___ தன்மை ___ பிரிவு :

கார்ப்பு ___ வெப்பம் - கார்ப்பு

குணம் :

"வாதப் பிணிவயி றூதற் செவிவாய்

வலிதலை வலிகுலை வலியிரு விழிநீர்

சீதத் தொடுவரி பேதிப் பல்லோ

சிகமலி முகமக முகமிடி கபமார்..."

சுக்கினால் வாதநோய்கள் தீரும்.

CHEMICAL CONSTITUENTS:

Gingerols, shogaols, dihydrogingerol, gingerdione, hexahydrocurcumin and desmethyl

hexahydrocurcumin, α -zingiberene, s-sesquiphellandrene, ar-curcumene, lipids, proteins, fats,

waxes, and starch.

3. மிளகு – Piper nigrum

ப.உ விதை

சுவை - தன்மை - பிரிவு :

கைப்பு, கார்ப்பு - வெப்பம் - கார்ப்பு

குணம்

தீயாகி யெங்கும் திரியுமதை யாவத்து

மேயாம லெப்படியு முண்டாக்காற் - பாயாது

போந்திமிர்வா தங்கிரந்தி புண்ணீரும் மண்ணவர்க்கும்

காந்திமெய்வா தச்சலுப்பைக் காய்

- தேரன் வெண்பா

மிளகினால் வாத நோய்கள், வாதத்தால் ஏற்படும் உடல் வலி தீரும்.

CONSTITUENTS:

Chavicine, piperine, piperidine, piperitine, pipercide, isochavinic acid, methyl caffeic acid,

pipericide, α and β- cic-bergamotene, guineensine, N-dtransferuloyltyramine

4. கடுக்காய் - Terminalia chebula

ப.உ. முதிர்ந்த கடுக்காய்

சுவை - தன்மை - பிரிவு :

துவர்ப்பு, சிறிது இனிப்பு, புளிப்பு, கார்ப்பு, கைப்பு - வெப்பம் - இனிப்பு

குணம் :

தாடை கழுத்தக்கி தாலு குறியிவிடப்

பீடை சிலிபதமுற் பேதிமுடம் - ஆடையெட்டாத்

தூலமிடி புண்வாத சோணிகா மாலையிரண்

டாலமிடி போம்வரிக்கா யால்

இது வாதாதி குற்றங்களைக் கீழ்நோக்கச் செய்யவும்

பசியைத் தூண்டவும் கூடியது.

CONSTITUENTS:

Gallic acid, chebupentol, terchebin, ellagitannin terchebulin, arjungenin, arjunolic acid,
arjungenin, terminoic acid, ferulic acid, vanillic acid, p-coumaric acid, caffeic acid and fatty acids,
tannin (30 - 32 %).

5. சீரகம் - cuminum cyminum

ப.உ விதை

சுவை - தன்மை - பிரிவு :

கார்ப்பு, இனிப்பு - தட்பம் - இனிப்பு

குணம் :

வாயுவொடு நாசிநோய் வன்பித்தம் சேராது

காயம் நெகிழாது கண்குளிருந் - தூயமலர்க்

காரளகப் பெண்மயிலே கைகண்ட தித்தனையுஞ்

சீரகத்தை நீதினமுந் தின்

அகத்தியர் குணவாகடம்

இதனால் வளிநோய்கள் தீரும்.

CONSTITUENTS:

Cuminaldehyde, cuminin,1,3 - t - menthadien -7-al, 1,4 - t - menthadien - 7-al,t-cymene, ϒ-

terpinene, β-pinene, 7-1(O-β-D-galalacturonide) -4-(1-O-β-D-glucopyranosyl)-3,5- dihydroxy

flavone, glycosides of luteolin and apigenin.

6. மஞ்சள் - Curcuma longa

ப.உ கிழங்கு

சுவை - தன்மை - பிரிவு :

கார்ப்பு, கைப்பு - வெப்பம் - கார்ப்பு

குணம் :

பொன்னிறமாம் மேனி புலானாற்ற மும்போகும்

மன்னு புருட வசியமாம் - பின்னியெழும்

வாந்திபித்த தோடமையம் வாதம்போந் தீபனமாங்

கூர்ந்தமஞ்ச ளின் கிழங்குக்கு

அகத்தியர் குணவாகடம்

மஞ்சளால் வாத நோய்கள் தீரும்.

CONSTITUENTS:

Curcumin, desmethoxy curcumin, bisdemethoxy curcumin, dihydrocurcumin, β-turmerone,

bisabolane derivatives, ukonan A, B, C & D phytosterols and fatty acids.

7. வெள்ளைப்பூண்டு – Allium Sativum

ப.உ. கிழங்கு

சுவை - தன்மை - பிரிவு :

கார்ப்பு - வெப்பம் - கார்ப்பு

குணம் :

சன்னியொடு வாதந் தலைநோவு தாள்வலி

மன்னிவரு நீர்க்கோவை வன்சீதம் - அன்னமே

உள்ளுள்ளி கண்பாய் உளைமூல ரோகமும்போம்

வெள்ளுள்ளி தன்னால் வெருண்டு.

- அகத்தியர் குணவாகடம்

இதனால் வாதநோய் விலகும்.

8. வாய்விளங்கம் - Embelia ribes

ப.உ விதை

சுவை - தன்மை - பிரிவு :

கைப்பு - வெப்பம் - கார்ப்பு

குணம் :

பாண்டுகுட்டம் குன்மம் பருந்தூல நோய்வாதந்

தீண்டு திரிவிடஞ் சிரந்துண்டம் - பூண்டமடி

நோய்விளங்கக் காட்டாத நுண்கிருமி யாசனப்புண்

வாய்விளங்கக் காட்ட விருமார்.

- அகத்தியர் குணவாகடம்

இதனால் வாதம் தீரும்.

CONSTITUENTS:

Embelin, quercitol, tannin, christembine, embelic acid and vilangin.

9. கொள்ளு - Macrotyloma uniflorum

ப.உ விதை

சுவை - தன்மை - பிரிவு :

துவர்ப்பு, சிறுகைப்பு - வெப்பம் - கார்ப்பு

குணம் :

வற்றிய உடம்பு தூணாம் வாதமும் பித்துங் குக்கி

சுற்றிய கிராணி குன்மஞ் சுரம்பல சுவாசகாசம்

உற்றடர் கண்ணன் புண்ணோ குறுபிணி யொழியும் வெப்பைப்

பெற்றிடுங் காணச்சாற்றாற் பெருஞ்சல தோடம் போமே

- அகத்தியர் குணவாகடம்

இதனால் வாதநோய்கள் விலகும்.

CONSTITUENTS:

Galactosyl inositol and six oleanane glycosides -azukisaponins I, II, III, IV, V and VI.

10. உளுந்து – Vigna mungo

ப.உ விதை

சுவை - தன்மை - பிரிவு :

இனிப்பு - தட்பம் - இனிப்பு

குணம் :

செய்யஉளுந் திற்குச் சிலேத்மவனி லம்பிறக்கும்

வெய்யபித்தம் போமந்தம் வீறுங்காண் - மெய்யதனில்

என்புருக்கி தீரும் இடுப்புக் கடுபலமாம்

முன்பு விருத்தியுண்டாய் முன்

- அகத்தியர் குணவாகடம்

உளுந்து உடலுக்கு ஊட்டத்தை தரும். இடுப்புக்கு வலிமை தரும்.

CHEMICAL COMPOSITION OF BLACK GRAM

Constitute	Composition
1) Calorific value	350 (cal./100 g)
2) Crude protein	26.2 percent
3) Fat	1.2 percent
4) Carbohydrate	56.6 percent
5) Calcium (mg)	185 (mg./100 g)
6) Iron (mg)	8.7 (mg./100 g)
7) Phosphorus (mg)	345 (mg./100 g)
8) Vitamine (mg)	
a) B_1	0.42 (mg./100 g)
b) B_2	0.37 (mg./100 g)
c) Niacine	2.0 (mg./100 g)

11. இந்துப்பு – Sodium cbloride impura

இது மண்பூதச் சரக்காகும்.

செய்கை :

மலகாரி

பசித்தீத் தூண்டி

அகட்டுவாய்வகற்றி

சிறுநீர்பெருக்கி

குணம் :

சென்னிக்கண்ணா பற்றூர் செவிகவுள்கண் பம்பக நோய்

சந்தியா சங்காசந் தாகமிரைப் - புன்னிரத்த

மூலஞ் சிலந்திநளி மூடிகந்ஞ் சூதை வலி

சூலஞ் சிதையுமிந்தாற் சொல்.

இதனால் வாதக்கடுப்பு, சூலை முதலியன தீரும்.

12. மோர்

இது நீர்க்கூறு ஆகும்

பொதுக் குணம் :

"மோருண வளிமுதன் மூன்றையு மடக்கி

யாருமெய் யினைத்தின மாதரித் திடுமே

மோரானது வாத முதலிய முக்குற்றங்களையும்

அதிகரிக்கவொட்டாமல் அடக்கி உடலை காப்பாற்றும்

ACUTE ANTI-INFLAMMATORY

ACTION OF PIRANDAI VADAGAM

AIM

To study the anti-inflammatory effect of **"PIRANDAI VADAGAM"**

PEPARATION OF TRIAL MEDICINE

1gm of the PIRANDAI VADAGAM was taken and dissolved in 100ml of hot water. A dose of 1ml was given to each rat. This 1ml contains 100mg of the trial medicine.

PROCEDURE

The anti-inflammatory activity of PIRANDAI VADAGAM was studied in healthy albino rats weighing 100-150gm. nine rats were collected and divided into three groups each containing three rats.

First group was kept controlled by giving distilled water of 2ml/100gm of body weight. The second group was given Ibuprofen as dose of 20mg/100gm of body weight. The third group received the trial medicine PIRANDAI VADAGAM of 65mg/100gm of body weight.

Before administration of trial medicine, the hind paw volumes of all rats were measured. This was done by dipping the hind paw up to tibiotarsal junction, into mercury plethysmography. While dipping the hind paw, by pulling the syringe piston, the level of mercury in the centre

small tube was made to coincide with red marking and reading was noted from the plethysmograph.

Soon after the measurement, the medicines were administered orally. Once hour later, a subcutaneous injection of 0.1ml of 1% (W/V) carrageen in water was made into plantar surface of both hind paw of each rat.

Three hours after carrageen injection, hind paw volume was measured once again. The difference between the initial and final volume was calculated and compared.

This method is more suitable for the anti-inflammatory activity in acute inflammation. The values are given in the table.

EFFECT OF PIRANDAI VADAGAM

Group	**Dose/100 mg Body weight**	**Initial reading In secs**	**Final readings**	**Mean difference**	**% of inflammation**	**% of inhibition**
Control water	2 ml	0.55	1.4	0.85	100	-
Standard Ibuprofen	20 mg	0.55	0.75	0.20	23.5	76.5
Pirandai vadagam	100 mg	0.6	0.85	0.25	29.4	70.6

RESULT

From the above experiment it was concluded that the PIRANDAI VADAGAM has **significant acute anti-inflammatory action.**

STUDY OF ANTI- ANALGESIC EFFECT OF TAIL FLICK METHOD

AIM:

To study the analgesic effect of PIRANDAI VADAGAM

Preparation of the test drug:

1gm of PIRANDAI VADAGAM was dissolved in 10 ml 0f milk. A dose of 2ml was given to each rat. This 2ml contains 200mg of the test drug.

PROCEDURE: Three groups of healthy albino rats on both the sexes were selected; each group having 3 rats. Each rat was put inside a rat holder with the tail projecting out fully. The tip of the tail was kept over a michrome wire of the analgesic meter without touching it.

Now the current of 5MA was passed through the analgesic meter to heat the michrome wire on the same time starting the stop watch. The time taken for the rat to flick the tail was noted. This is the reaction time, the reaction time is noted for each rat and average is calculated.

First group is given 2ml of distilled water and kept as control .second group was administered with paracetamol at a close of 20mg/100gm of body weight orally. The test drug PIRANDAI VADAGAM was administered to the third group at the dose of 65mg of body weight.

After the lapse of half an hour and one hour the reaction time of each rat was noted in each group at an interval of 2 min and average is calculated.

ANALGESIC EFFECT OF PIRANDAI VADAGAM

S.No	Drug	Dose/100 g by body weight of the rat	Initial reading in seconds	Reading after drug Administration in Seconds			Mean Difference
				After 30 Min	After 60 Min	After 180 Min	
1	Control (Water)	2ml	2.0secs	2.0secs	2.0 secs	2.0 secs	2.0 secs
2	Standard (Paracetamol)	20mg	2.5 secs	4.5 secs	6.5 secs	6.5 secs	6.5 secs
3	Pirandai vadagam	100mg	2.o secs	4.0 secs	5.8 secs	5.8 secs	5.8 secs

INFERENCE

The test drug PIRANDAI VADAGAM has **significant analgesic action**.

BIO-CHEMICAL ANALYSIS OF PIRANDAI VADAGAM

PREPARATION OF THE EXTRACT:

5 gms of the drug was weighed accurately and placed in a 250 ml clean beaker. Then 50 ml of distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It is cooled and filtered in a 100ml volumetric flask and then it is made up to 100ml with distilled water. This fluid is taken for analysis.

S. NO	EXPERIMENT	OBSERVATION	INFERENCE
1.	**TESTFOR CALCIUM** 2ml of the above prepared extract is taken in a clean test tube. To this 2ml of 4 % Ammonium oxalate solution is added.	A white precipitate is formed	Indicates the presence of Calcium
2.	**TEST FOR SULPHATE:** 2ml of the extract is added to 5% barium chloride solution.	A white precipitate is formed	Absence of Sulphate
3.	**TESTFOR CHLORIDE** The extract is treated with silver nitrate solution	A white precipitate is formed	Absence of Chloride

4.	**<u>TEST FOR CARBONATE</u>** The substance is treated with concentrated Hcl	Brisk effervescence is formed	Absence of Carbonate
5.	**<u>TEST FOR STARCH</u>** The extract is added with weak iodine solution.	No blue colour is formed	Absence of Starch.
6.	**<u>TEST FOR IRON FERRIC</u>** The extract is acidified with Glacial acetic acid and potassium ferro cyanide.	No blue colour is formed	Absence of Ferric Iron
7.	**<u>TEST OF IRON FERROUS</u>** The extract is treated with concentrated nitric acid and ammonium thiocyanate solution.	Blood red colour is formed	**Indicates the presence of Ferrous Iron.**
8.	**<u>TESTFOR PHOSPHATE</u>** The extract is treated with ammonium molybdate and concentrated nitric acid.	No yellow precipitate is formed	Absence of Phosphate.
9.	**<u>TEST FOR ALBUMIN</u>** The extract is treated with Esbach's reagent.	No yellow precipitate is formed.	Absence of Albumin

10.	**<u>TEST FOR TANNIC ACID</u>** The extract is treated with ferric chloride.	No blue black precipitate is formed.	Absence of Tannic acid
11.	**<u>TESTFOR UNSATURATION</u>** Potassium permanganate solution is added to the extract	It does not get decolourised	**Indicates the presence of unsaturated compound**.
12.	**<u>TEST FOR THE REDUCING SUGAR</u>** 5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 mts and 8-10 drops of the extract is added and again boiled for 2 mts.	No colour change occurs.	Absence of Reducing Sugar.
13.	**<u>TEST FOR AMINO ACID</u>** One or two drops of the	Violet colour is formed	Absence of Amino acid

	extract is placed on a filter paper and dried well. After drying, 1% Ninhydrin is sprayed over the same and dried well.		
14.	**<u>TEST FOR ZINC:</u>** The extract is treated with potassium ferro cyanide	A white precipitate is formed	Absence of Zinc.
15.	**<u>Test for Mercury:</u>** The extract is treated with ammonia and boil (till ammonia cases of) and then potassium Iodide (1% solution) is added	No scarlet precipitate is formed	Absence of Mercury

ANNEXURE – IV

ASSESSMENT FORMS

FORM I - SCREENING FORM

FORM II - CONSENT FORM

FORM III - CASE PROFORMA

FORM IV - LABORATORY INVESTIGATIONS

FORM V - CLINICAL ASSESSMENT

FORM VI - PATIENT WITHDRAWAL FORM

FORM VII - DRUG COMPLIANCE FORM

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POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF PIRANDAI VADAGAM FOR ASTHIVATHAM (OSTEOPOROSIS)

FORM I –SCREENING FORM

1. OP/ IP No:	2. BED No:
3. Sl. No:	4. NAME:
5. AGE:	6. GENDER:
7. OCCUPATION:	8. SOCIAL STATUS
9. DATE OF ADMISSION:	10. DATE OF DISCHARGE:

11. POSTAL ADDRESS:

I. INCLUSION CRITERIA:

1. Sex: Both Male and Female.
2. Complaint of low backache, bony pain in all joints, weakness of limbs.
3. Age related osteoporosis.
4. Post menopausal osteoporosis.
5. Patients who are willing for admission and stay in IPD for 48 days or willing to attend patents who are willing to undergo radiological OPD investigation and give blood for laboratory investigation.

II. EXCLUSION CRITERIA:

1. Patients with established Hypertension .
2. Cardiac diseases.
3. Pregnancy and Lactation
4. Patients with any other serious illness
5. Severe trauma.
6. Any other systemic diseases

III. WITHDRAWAL CRITERIA:

1. Development of any adverse reaction (ADR)
2. Occurrence of any other systemic illness

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POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF PIRANDAI VADAGAM FOR ASTHIVATHAM (OSTEOPOROSIS)

Form: II CONSENT FORM

CERTIFICATE BY INVESTIGATOR

I certify that I have disclosed all the details about the study in the terms readily understood by the patient.

Signature……. Date……

Name……

CONSENT BY PATIENT

I have been informed to my satisfaction, by the attending physician, the purpose of the clinical trial, and the nature of drug treatment and follow-up including the laboratory investigations to be performed to monitor and safeguard my body functions.

I am aware of my right to opt out of the trial at any time during the course of the trial without having to give the reasons for doing so.

I, exercising my free power of choice, hereby give my consent to be included as a subject in the clinical trial of PIRANDAI VADAGAM for the treatment of ASTHIVATHAM (OSTEOPOROSIS).

Signature…….

Date…….

Name……

அரசினர் சித்த மருத்துவக் கல்லூரி மற்றும்

மருத்துவமனை,பாளையங்கோட்டை

பட்டமேற்படிப்பு சிறப்புமருத்துவத்துறை

"பிரண்டை வடகம்" மருந்தின் பரிகரிப்புத்திறனைக் கண்டறியும் மருத்துவ ஆய்வு

ஒப்புதல் படிவம்

ஆய்வாளரால் சான்றளிக்கப்பட்டது

நான் இந்த ஆய்வைக் குறித்த அனைத்து விபரங்களையும் நோயாளிக்கு புரியும் வகையில் எடுத்துரைத்தேன் என உறுதியளிக்கிறேன்.

தேதி: கையொப்பம்:

இடம்: பெயர்:

நோயாளியின் ஒப்புதல்

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும் மருந்தின் தன்மை மற்றும் மருத்துவ வழிமுறையைப் பற்றியும் தொடர்ந்து எனது உடல் இயக்கத்தை கண்காணிக்கவும், அதனைப் பாதுகாக்கவும் பயன்படும் மருத்துவ ஆய்வுக்கூட பரிசோதனைகள் பற்றியும் திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விளக்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது காரணம் எதுவும் கூறாமல் எப்பொழுது வேண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்துக் கொள்ளும் உரிமையை தெரிந்திருக்கின்றேன்.

நான் என்னுடைய சுதந்திரமாகத் தேர்வு செய்யும் உரிமையைக் கொண்டு

வாத தம்பம் என்னும் நோய்க்கான "பிரண்டை வடகம்" மருந்தின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கு என்னை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

தேதி:	கையொப்பம்:
இடம்:	பெயர்:
தேதி:	சாட்சிக்காரர் கையொப்பம்:
இடம்:	பெயர்

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POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF PIRANDAI VADAGAM FOR ASTHIVATHAM (OSTEOPOROSIS)

FORM III – CASE PROFORMA

1. OP/ IP No: 2. BED No: 3. Sl. No:

4. NAME: 5. AGE: 6. GENDER:

7. OCCUPATION: 8. SOCIAL STATUS

9. DATE OF ADMISSION: 10. DATE OF DISCHARGE:

11. POSTAL ADDRESS:

Lecturer **HOD**

---

12. COMPLAINTS & DURATION

13. HISTORY OF PRESENT ILLNESS:

14. PAST HISTORY:

15. FAMILY HISTORY:

16. MENSTRUAL HISTORY (If applicable):

17. HABITS:	**Yes**	**No**
1. Smoker	☐	☐
2. Alcoholic	☐	☐
3. Betel nut chewer	☐	☐
4. Non-Veg /Vegetarian	☐	☐
5. Drug addiction	☐	☐

18. GENERAL EXAMINATION:

1. Body weight [Kg] :
2. Height [cm] :
3. Body Temperature [^{o}F] :
4. Blood Pressure (mmHg) :
5. Pulse Rate /min. :
6. Heart Rate /min. :
7. Respiratory Rate /min. :

		Yes	No
8. Pallor	:	☐	☐
9. Jaundice	:	☐	☐
10. Clubbing	:	☐	☐
11. Cyanosis	:	☐	☐
12. Pedal Edema	:	☐	☐
13. Lymph adenopathy	:	☐	☐
14. Jugular venous pulsation:		☐	☐

19. CLINICAL EXAMINATION OF LUMAR SPINE:

I. INSPECTION	**Present**	**Absent**
1. Swelling	☐	☐

……

2. Muscle wasting ☐ ☐

……

3. Deformity ☐ ☐

……

II. PALPATION: **Present** **Absent**

1. Tenderness ☐ ☐ ……..

2. Swelling ☐ ☐ ……

3. Warmth ☐ ☐ ……

III. MOVEMENTS:

1. Restriction of Movements Lumbar spine: Full Partial

☐ ☐ ☐

No

2.LUMBAR SPINE : PAIN MUSCULAR SPASM ROM

Yes No Yes No Normal

Reduced

i. Flexion ☐ ☐ ☐ ☐ ☐ ☐

ii. Extension ☐ ☐ ☐ ☐ ☐ ☐

3. NEUROLOGICAL EXAMINATION:

i. Sensation	Normal	☐	Abnormal	☐
ii. Tone	Normal	☐	Abnormal	☐
iii. Power	Normal	☐	Abnormal	☐
iv.Muscle wasting	Present	☐	Absent	☐

4. REFLEXES:	**Normal**	**Exaggerated**
i. Knee jerk	☐	☐
ii. Ankle jerk	☐	☐

20. CLINICAL ASSESSMENT:

I. PAIN:

A. Radiating Pain from low back to the legs:

No	Mild	Moderate	Severe
☐	☐	☐	☐

i. Onset	Sudden	☐	Gradual	☐		
ii. Nature:	Local	☐	Diffuse	☐	Others	☐
B. Nature of pain	Shooting	☐	Burning	☐	Others	☐

	YES	*NO*
C. Pain during movements	☐	☐
II. Numbness	☐	☐
III.Swelling	☐	☐
III.Foot drop	☐	☐
IV. Restricted joint movements	☐	☐

21. EXAMINATION OF OTHER SYSTEMS:

	Normal	**Abnormal**
1. CVS	☐	☐
2. RS	☐	☐
3. CNS	☐	☐
4. ABDOMEN	☐	☐
5. GENITO-URINARY	☐	☐

SIDDHA ASPECTS

1. NILAM:

1. Kurinji ☐ 2. Mullai ☐ 3. Marutham ☐ 4. Neithal ☐ 5. Paalai ☐

2 . KAALAM:

1. Kaar Kaalam ☐ 2. Koothir Kaalam ☐ 3. Munpani Kaalam ☐

4. Pinpani Kaalam ☐ 5. Ilavenir Kaalam ☐ 6. Muduvenir Kaalam ☐

3. YAAKKAI:

1. Vatham ☐ 2. Pitham ☐ 3. Kabam ☐

4. Vathapitham ☐ 5. Pithavatham ☐ 6. Kabavatham ☐

7. Vathakabam ☐ 8. Pithakabam ☐ 9. Kabapitham ☐

4. GUNAM:

1. Sathuvam ☐ 2. Rasatham ☐ 3. Thamasam ☐

5. IYMPORIGAL: Normal Affected

1. Mei ☐ ☐

……

2. Vaai ☐ ☐

……

3. Kan ☐ ☐

……

4. Mookku ☐ ☐

……

5. Sevi ☐ ☐

……

6. KANMENDHIRIUM / KANMAVIDAYAM:

	Normal	**Affected**	
1. Kai	☐	☐	……...
2.	☐	☐	Kaal

……...

3. Vaai	☐	☐	……..
4.	☐	☐	Eruvaai

……..

5.	☐	☐	Karuvaai

……..

7. UYIR THATHUKKAL:

I. VATHAM: **Normal** **Affected**

1. Piraanan ☐ ☐

.....

2. Abaanan ☐ ☐

.....

3. Viyaanan ☐ ☐

.....

4. Uthaanan ☐ ☐

.....

5. Samaanan ☐ ☐

.....

6. Naagan ☐ ☐

.....

7. Koorman ☐ ☐

.....

8. Kirukaran ☐ ☐

.....

9. Devathatha ☐ ☐

……

10. Dhananjeyan ☐ ☐

……

II. PITHAM : **Normal** **Affected**

1. Analam ☐ ☐

……

2. Ranjagam ☐ ☐

……

3. Saathagam ☐ ☐

……

4. Aalosagam ☐ ☐

……

5. Prasagam ☐ ☐

……

III. KABAM: **Normal** **Affected**

1. Avalambagam ☐ ☐

   .....

2. Kilethagam ☐ ☐

   .....

3. Pothagam ☐ ☐

   .....

4. Tharpagam ☐ ☐

   .....

5. Santhigam ☐ ☐

   .....

8. UDAL THATHUKKAL: Normal Affected

1. Saaram ☐ ☐

   ..... ☐ ☐

2. Senneer

   .....

3. Oon ☐ ☐

……

4. Kozhuppu ☐ ☐

……

5. Enbu ☐ ☐

……

6. Moolai ☐ ☐

……

7. Sukkilam/Suronitham ☐ ☐

……

9. ENVAGAI THERVUGAL:

1 **. Naadi** ……

	Normal	**Affected**	
2. **Sparisam**	☐	☐	……..
3. **Naa**	☐	☐	……
4. **Niram**	☐	☐	……..
5. **Mozhi**	☐	☐	……..
6. **Vizhi**	☐	☐	……..

7. **Malam**

a. Niram ☐ ☐ ……..

b. Nurai ☐ ☐ ……..

c. Kirumi ☐ ☐ ……..

d. Thanmai: i. Irugal ☐ ii. Ilagal ☐

8. Moothiram:

I. NEERKKURI Normal Affected

a. Niram ☐ ☐ ……..

b . Manam ☐ ☐ ……..

c. Edai ☐ ☐ ……..

d. Nurai ☐ ☐ ……..

e. Enjal ☐ ☐ ……..

II. NEIKKURI: ……

Vatha Neer ☐ Pitha Neer ☐ Kaba Neer ☐

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AN OPEN CLINICAL TRIAL OF PIRANDAI VADAGAM FOR ASTHIVATHAM (OSTEOPOROSIS)

Form IV - LABORATORY INVESTIGATIONS

1. OP/ IP No: 2. BED No: 3. Sl. No:

4. NAME: 5. AGE: 6. GENDER:

7. OCCUPATION: 8. SOCIAL STATUS

9. DATE OF ENROLMENT: 10. DATE OF DISCHARGE:

11. POSTAL ADDRESS:

Lecturer **HOD**

Date:

I. BLOOD:

1. TC : (Cells/Cumm)
2. DC (%): N L M E
3. ESR (mm) : ½ hr 1 hr
4. Hb:
5. Total RBC:

6. Blood Sugar: a) Fasting b) Post prandial

7. Kidney function tests:

   Blood urea: Serum creatinine:

8. Lipid profile:

   HDL: LDL: VLDL:

   Total Cholesterol : TGL:

9. Liver Function tests:

   SGOT: SGPT: Alk. Phosphatase:

   Albumin: Globulin: Total Protein:

   Serum Bilirubin: Total Direct Indirect :

II. URINE:

1. Albumin :
2. Sugar :
3. Epithelial cells :
4. Pus cells :
5. Red blood cells :
6. Casts/Crystals :

III. MOTION:

1. Ova :
2. Cyst :

IV. X-RAY:

V. MRI:

VI.BONE MINERAL DENSITY:

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POST- GRADUATE DEPARTMENT OF SIRAPPU

MARUTHUVAMAM

AN OPEN CLINICAL TRIAL OF PIRANDAI VADAGAM FOR ASTHIVATHAM (OSTEOPOROSIS)

FORM V – CLINICAL ASSESSMENT

1. OP/ IP No: 2. BED No: 3. Sl. No:

4. NAME: 5. AGE: 6. GENDER:

7. OCCUPATION: 8. SOCIAL STATUS

9. DATE OF ADMISSION: 10. DATE OF DISCHARGE:

11. POSTAL ADDRESS:

Lecturer **HOD**

CLINICAL EXAMINATION OF LUMBAR SPINE :

I. INSPECTION:	**Present**	**Absent**
1. Swelling	☐	☐

……

2. Muscle wasting ☐ ☐

……

3. Deformity ☐ ☐

……

II. PALPATION: **Present** **Absent**

1. Tenderness ☐ ☐ ……

2. Swelling ☐ ☐ ……

3. Warmth ☐ ☐

……

III. MOVEMENTS:

1. Restriction of Movements in theLumbar spine : Full Partial

☐ ☐ ☐

No

2.LUMBAR SPINE : PAIN MUSCULAR SPASM ROM

Yes No Yes No Normal

Reduced

i. Flexion ☐ ☐ ☐ ☐ ☐ ☐

ii. Extension ☐ ☐ ☐ ☐ ☐ ☐

3. NEUROLOGICAL EXAMINATION:

i. Sensation: Normal ☐ ☐ Abnormal

……...

ii. Tone Normal ☐ Abnormal ☐

……..

iii. Power Normal ☐ ☐ Abnormal

..…… ☐ ☐

iv. Muscle wasting: Present Absent …….

4. REFLEXES:	**Normal**	**Exaggerated**
i. Knee jerk	☐	☐
ii. Ankle jerk	☐	☐

20. CLINICAL ASSESSMENT:

I. PAIN:

A. Radiating Pain from low back to legs:

No ☐ Mild ☐ Moderate ☐ Severe ☐

i. Onset Sudden ☐ Gradual ☐

ii. Nature: Local ☐ Diffuse ☐ Others ☐

B. Nature of pain Shooting ☐ Burning ☐ Others ☐

	Yes	No
C. Pain during movements	☐	☐
II. Morning stiffness	☐	☐
III. Swelling	☐	☐
IV. Foot drop	☐	☐
V. Restricted joint movements	☐	☐

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AN OPEN CLINICAL TRIAL OF PIRANDAI VADAGAM FOR ASTHIVATHAM (OSTEOPOROSIS)

FORM - VI PATIENT WITHDRAWAL FORM

1. OP / IP No …… 2. S.No. …… 3.Date: ……

4. Name …….. 5. Age …… 6. Gender ……

7. Postal address:

Complaints and Duration:

Irregular treatment:

Other causes:

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PALAYAMKOTTAI.

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF PIRANDAI VADAGAM FOR ASTHIVATHAM (OSTEOPOROSIS)

FORM VII - DRUG COMPLIANCE FORM

Name of the Drug: PIRANDAI VADAGAM

Drugs issued: ……(mgs/Grams)

Drugs returned: ……(mgs/Grams)

S.NO	**DATE**	**DRUG TAKEN TIME**		
		MORNING/TIME	AFTERNOON/TIME	NIGHT/TIME
Day 1				
Day 2				
Day 3				
Day 4				
..				
..				
Up to day 48				

Date:

Station:

Signature of the Investigator:

Signature of the Lecturer: **Signature of the HOD**

BILIOGRAPHY

1. The Bible.
2. Tamil vaithya sadagam.
3. Siddha formulary of India.
4. Davidson's principles and practice of medicine.
5. Thotrakirama aaraichiyum siddha maruthuva varalarum.

   -Dr. K.s. Uthamarayan.

6. Biochemistry.

   V. Sathyanarayanan.

7. Dhanvantri vaithyam Part I.
8. Fundamentals of Bio chemistry for medical students.

   Dr. Ambika shanmugam.

9. Robin's Pathological Basis of disease.
10. Medical emergency diagnosis and management.

    Robbinson .

11. Balavakatam.

    Dr. pon kurusiramani.

12. Siddha Vaithya thirattu.
13. Pharamacology and pharmacotherapeutics.

    R.s. Satoskar.

14. Outline of fractures.

    John Crawford adams.

David L. Hamblen.

15. Noi nadal noimudhal nadal thirattu.

Dr. Sanmugavelu.

16. Siddha maruthuvam .

Dr. Kuppusamy.

17. Gunapadam (Siddha Materia medica).

Part I – K.S. Murugesan.

18. Human anatomy.

B.D.Chaurasia.

19. Medicine for students.

Golwalla.

20 A short text book of medicine.

Houstan.

21. A short text book of medicine.

V.Kirishna das.

22. The Washington manual of medical therapeutics.

carey lee woeltje.

23. Oxford handbook of clinical specialities.

_Collier Longmore Hodgetts.

24. Essentials of medical pharmacology.

- Tripathy.

25. Pathartha guna sinthamani.

26. Essentials of medical physiology.

-K. sembulingam.

27. Hutchinson’s clinical methods.

28. Siddha maruthuvanga surukam.

29. How to examine the patients.

Menino de souza.

30 Taber’s medical dictionary.

31. Thirukkural.

DEPARTMENT OF PG SIRAPPU MARUTHUVAM

GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL

PALAYAMKOTTAI, TIRUNELVELI

Certificate

This is to certify that **Dr. P. JEROME XAVIER (III Year)**

has attended the CME on

"VARMAM AND ENBU MURIVU"

on 31.10.2012 conduced by Department of PG Sirappu Maruthuvam under the auspices of The Tamil Nadu Dr. MGR Medical University, Chennai.

31.10.12

Dr. S. KANIRAJA, M.D(s)
Head of the Department
Department of PG Sirappu Maruthuvam,
Govt. Siddha Medical College,
Palayamkottai

Dr. S. MOHAN, M.D(s)
Principal i/c
Govt. Siddha Medical College,
Palayamkottai

From

Dr. P.Jerome Xavier,
Second year M.D(s),
Dept of Sirappu Maruthuvam,
Govt siddha medical college,
Palayamkottai.

To

The Screening committee,
Govt Siddha Medical College,
Palayamkottai.

Through proper channel,

Respected sir,

Sub: Regarding the approval of the dissertation topic.

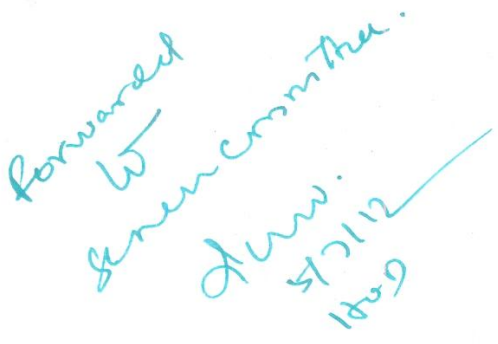
I am undergoing my post graduation in Sirappu Maruthuvam branch in Govt Siddha Medical College, Palayamkottai, (2012-2013). I have selected my dissertation topic "ASTHI VADHAM" and the trail drug for my topic is "PIRANDAI VADHAM(Internal)" from the book Dhanvandhri Vaidhiyam Part 1 as my dissertation.

Hence I request the members of screening committee to grant me permission and kindly approve this topic as my dissertation work.

Thanking you.

Place : Palayamkottai
Date :

Yours Faithfully



GOVT. SIDDHA MEDICAL COLLEGE
PALAYAMKOTTAI
TIRUNELVELI- 627002.

SCREENING COMMITTEE

Candidate Reg No : 32102003

This is to certify that the dissertation topic 'ASTHI VADHAM' and the drug PIRANDAI VADHAM(Internal) have been approved by the screening committee.

S.No	Name	Signature
1.	Prof. Dr.N.Chandramohan Doss M.D(s) Principal & chairman.	
2.	Prof. Dr. R.Thangamoney M.D(s)	
3.	Dr.A.Subramanian M.D(s)	

(Kindly make sure that the minutes of the meeting duly signed by all the participation are maintained by the college office.)

INSTITUTIONAL ETHICS COMMITTEE (I.E.C)
GOVERNMENT SIDDHA MEDICAL COLLEGE
PALAYAMKOTTAI

No.....5...../IEC/GSMC/2011-12 DT.....6.6.2012

CERTIFICATE

This to certify that the project title ...A STUDY ON ASTHIVATHAM...

DISSERTATION FOR THE PARTIAL FULFILMENT FOR THE AWARD OF DEGREE OF DOCTOR OF MEDICINE by DR.P.JEROME XAVIER BRANCH - III SIRAPPU MARUTHUVAM. REG.NO.: 32102003 - 2010 - 2013.

has been approved by the IEC on condition basis.

Name of Member secretary

Dr.R.KAMALAM, M.D.(S)

6/6/12

Signature with date

(Kindly make sure that minutes of the meeting duly signed by all the participants are maintained by office)

Seeraham

Sukku

Kadukkai

Vaaivilangam

Ulunthu

Kollu

Inthuppu

Manjal

Milahu

Poondu

Pirandai

Pirandai Vatakam